Issue 133

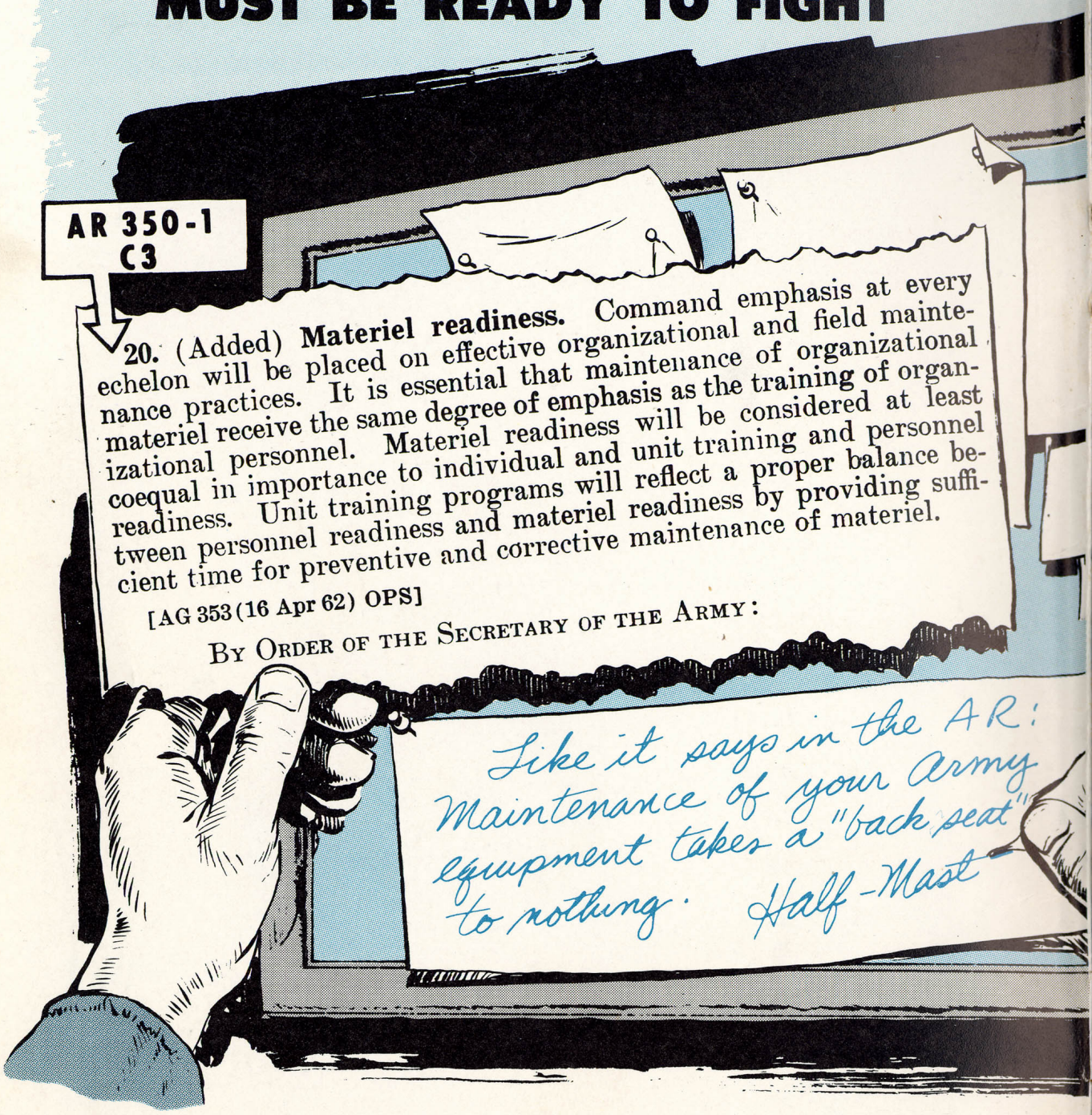
# PS

1963 Series

# THE PREVENTIVE MAINTENANCE MONTHLY

Issue 133
P.S
1963 Series
THE PREVENTIVE MAINTENANCE MONTHLY

# MEN AND EQUIPMENT MUST BE READY TO FIGHT




Maintenance of your Army equipment takes a "back seat" to nothing.

AR 350-1, Army Training Policies, says flatly that keeping equipment combat-ready is as important as keeping soldiers trained and in fighting shape.

Now you know, your sergeant knows, your CO knows and all the commanders up the line know: Men **and equipment** will be kept ready.

And, when necessary, you, your equipment and your outfit can fight—and win.

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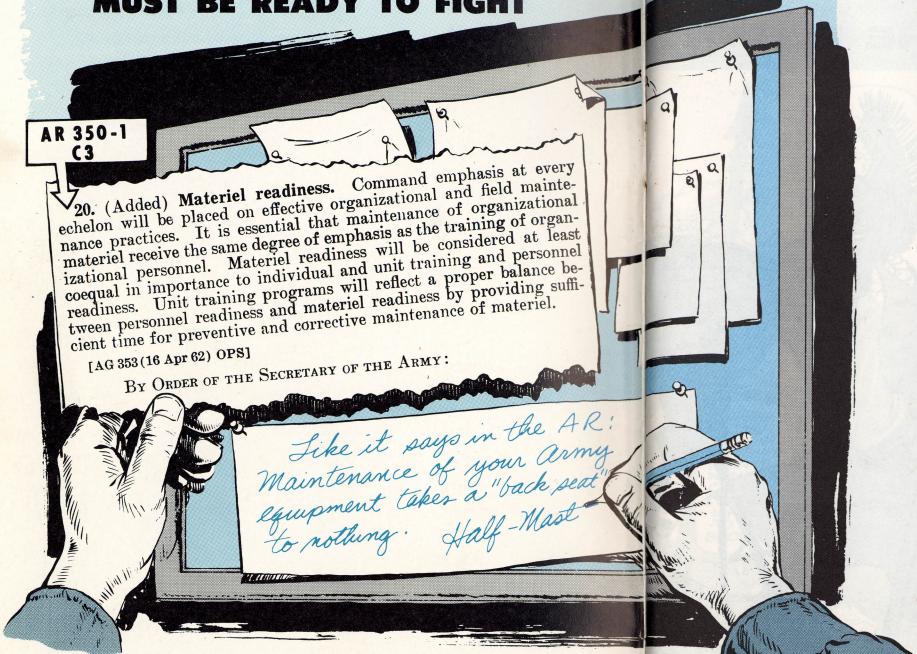


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THE **PREVENTIVE MAINTENANCE** MONTHLY
Issue No. 133 1963 Series


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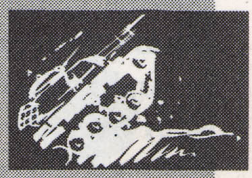

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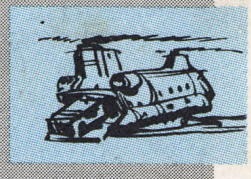

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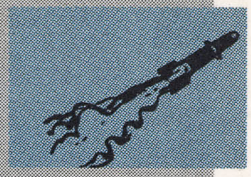

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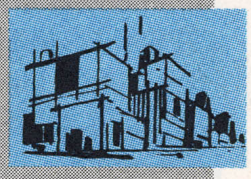

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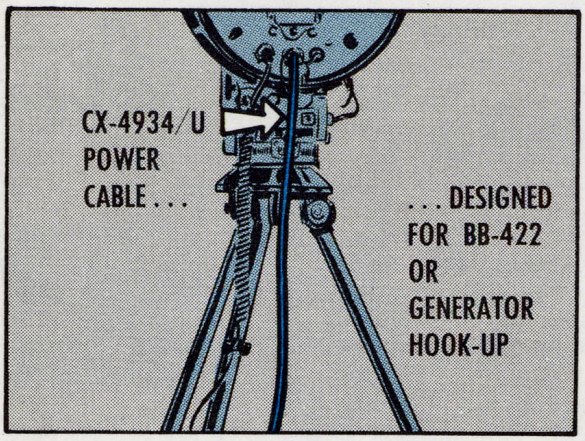
# THE POTENT

A portable peach with a package of power primed to protect you—that's the AN/PPS-4 radar set.

Know her and treat her right, and little Pipsy-4 can help save your skin and that of everybody in your outfit. She's a night fighter with eyes that see everything. Give her her head and you'll save yours.

The PPS-4 can pick up a cornstalk waving gently in the breeze . . . or a 50-ton tank rumbling over a hill.

And put this down in BIG letters in your memory book. The Pipsy-4 is designed for use with the BB-422/U nickel-cad battery or a 24-volt DC generator.




The CX-4934/U power cable on the PPS-4 is designed for the BB-422 or generator hook-up. Connector, plug 3106-10-SL-4S is on the RT end, and connector, plug 3106A-20-22P is at the battery or generator end.

The PPS-4 has a positive ground—and that can lead to all kinds of problems if you have to use something other than a BB-422.

You should be getting the new

Good Operator

# THE POTENT PM Produces... PPS-4

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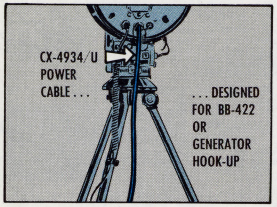


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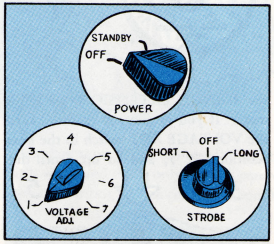
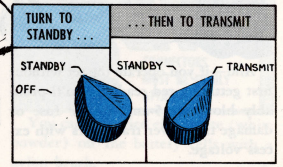
The PPS-4 has a positive ground—and that can lead to all kinds of problems if you have to use something other than a BB-422.

You should be getting the new PU-532/PPS-4 engine generator soon, which should save sweat when you require an auxiliary power source. The generator has a 2.5-amp outlet for operation of the Pipsy-4 and an outlet furnishing up to 17 amps to recharge the BB-422.




To protect the set, the POWER and STROBE switches must be in the OFF positions, and the VOLTAGE ADJ switch must be in position "1" before power is connected. That way, you avoid damage to the power transistors. Don't overlook the "warning" decal on the face of the set concerning the VOLTAGE ADJ position.

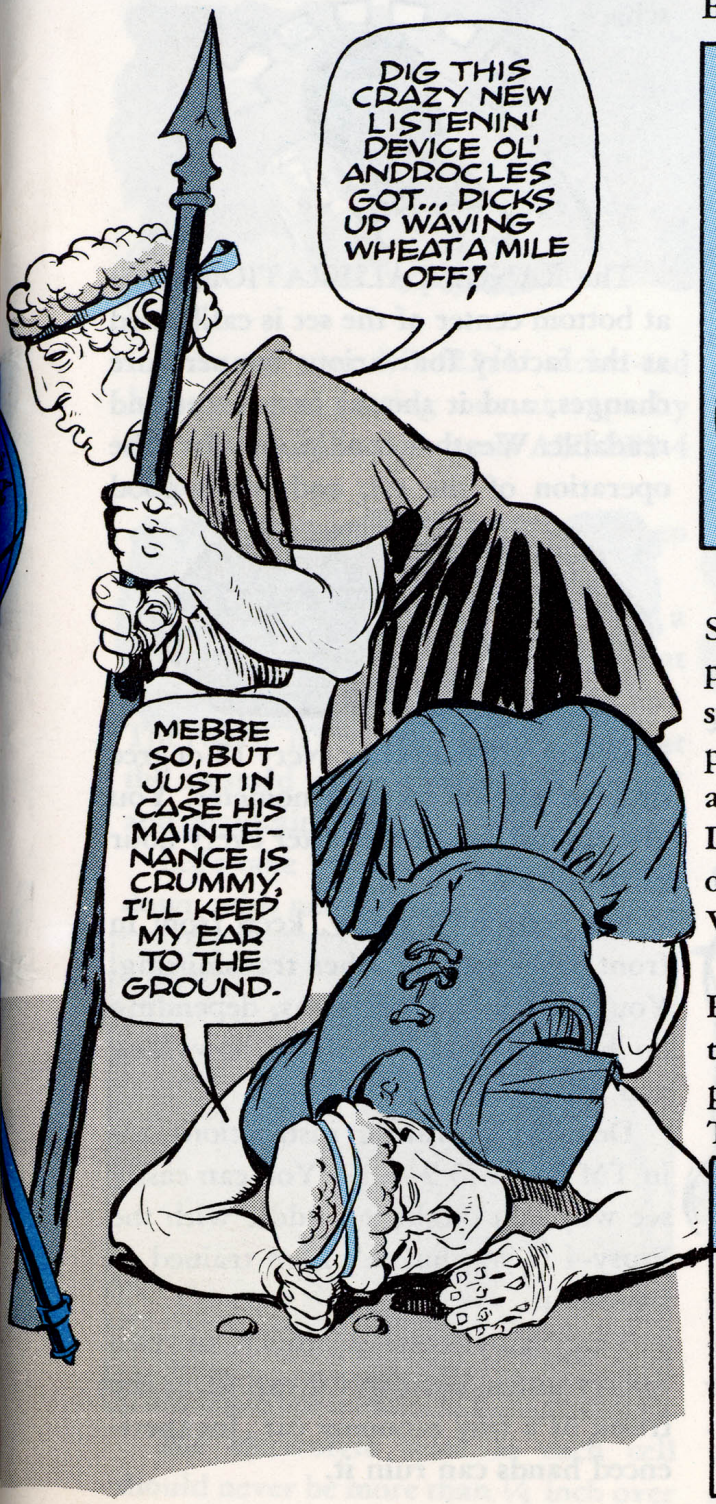
Turn the set on by flicking the POWER switch to STANDBY position. Following a 90-second warm-up period, turn the POWER switch to TRANSMIT.




MORE

## PM Produces . . .

# PPS-4

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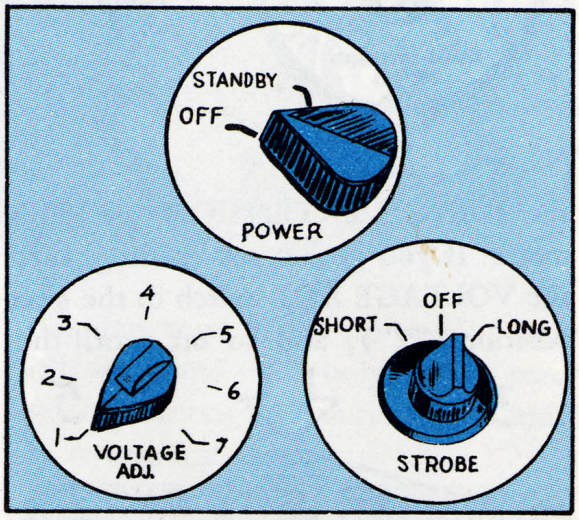


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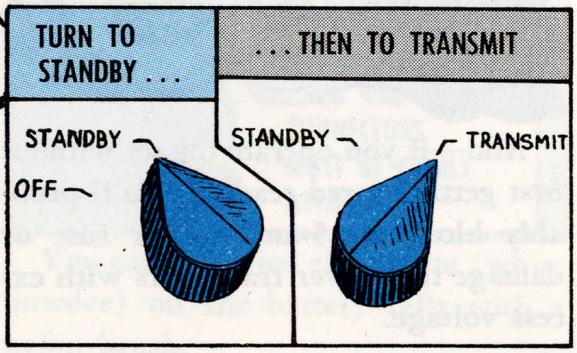
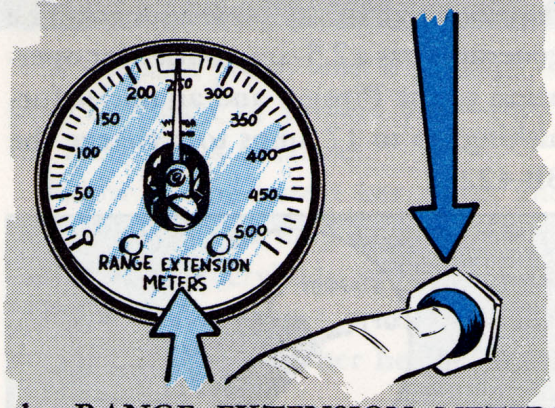


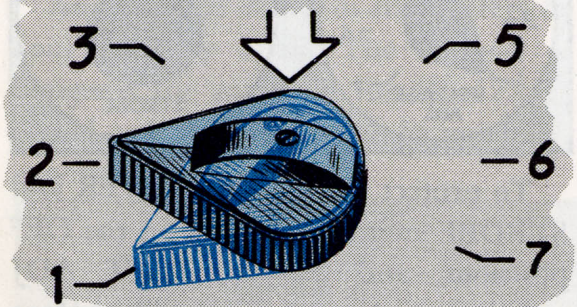



P.S. MORE

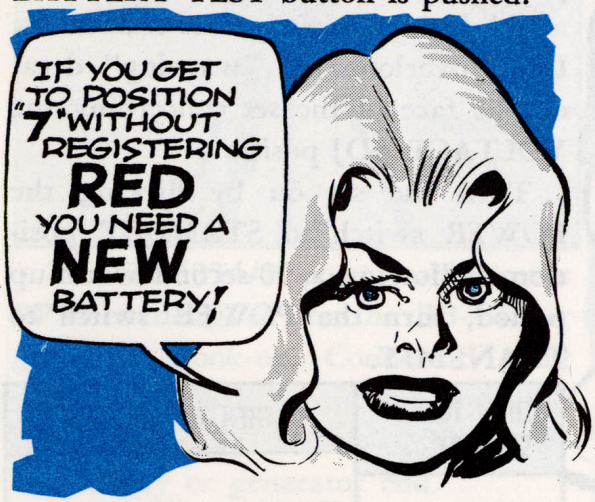
Push the BATTERY TEST button for a check on a red reading on




the RANGE EXTENSION METERS meter. If you get no red reading, turn the VOLTAGE ADJ switch to the next position ("2"), and so on, until the

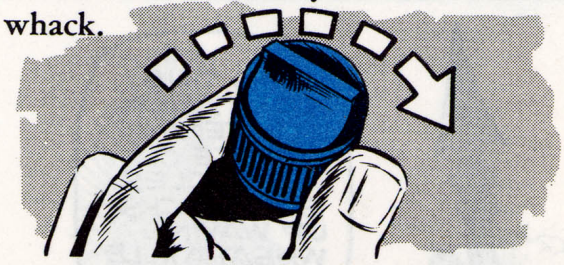



meter registers in the red when the BATTERY TEST button is pushed.

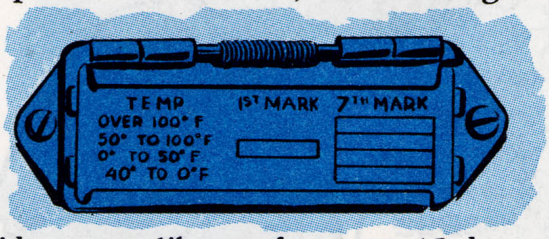



And—if you operate the set without first getting a red reading you'll probably blow the 5-amp power fuse or damage the power transistors with excess voltage.

Remember, too, that the VOLUME switch must be at maximum (clockwise) for calibration. If the switch is not all the way over, you may get no reading on the RANGE EXTENSION METERS and think your set's out of whack.



The RANGE CALIBRATION chart at bottom center of the set is calibrated at the factory for various temperature changes, and it should be present and readable. Weather conditions affect the operation of the set, and it's a good



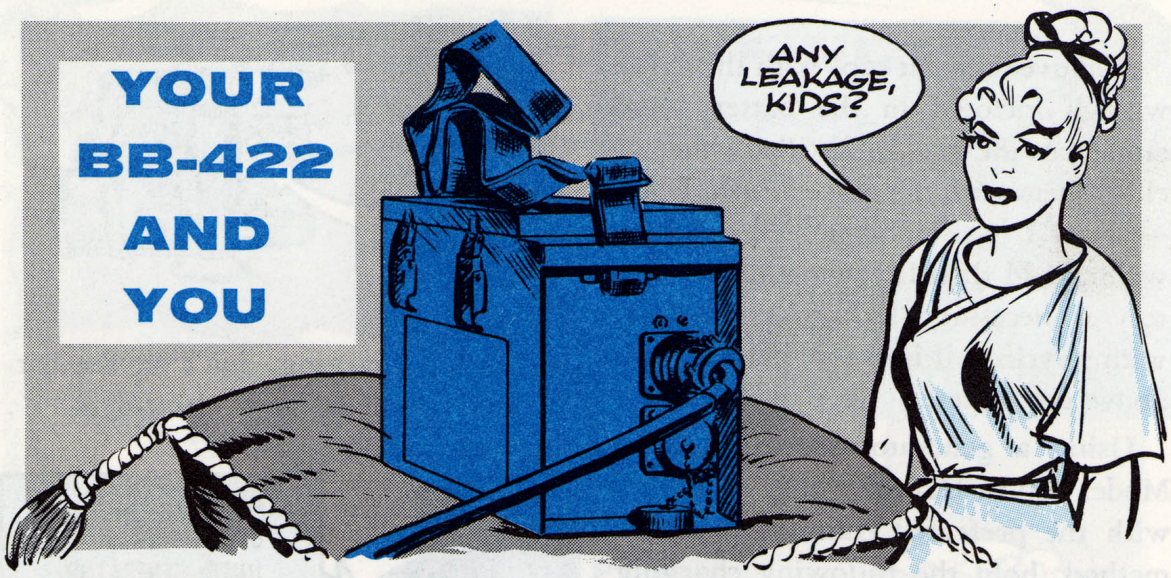

idea to recalibrate after every 15-degree drop or rise of the thermometer. You also should recalibrate after every hour of operation.

For your own safety, keep from in front of the radome when transmitting. You can get bad RF burns, depending on how close you are and how long you stay.

Detailed operating instructions are in TM 11-5840-211-12. You can easily see why you ought not fiddle with the Pipsy-4 if you haven't been trained to handle it.

That baby costs as much as two luxury autos, even tho it can fit in the trunk of a tiny economy car. Inexperienced hands can ruin it.

# YOUR BB-422 AND YOU

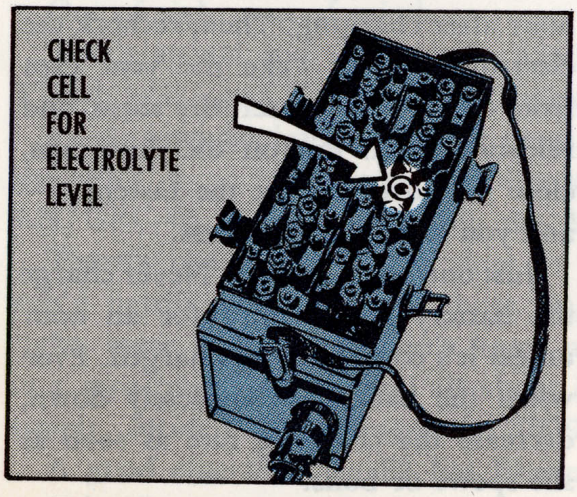



You say your BB-422/U nickel-cad battery isn't putting out at capacity when you use it with your AN/PPS-4 radar set?

Or it doesn't retain its charge when you let it stand overnight?

Mebbe so. And mebbe there're a coupla' three good reasons for it that could be eliminated with proper PM. The word is that the battery can cut the mustard when it's tenderly charged and maintained.

Let's take it from the top and work down with maintenance aids.

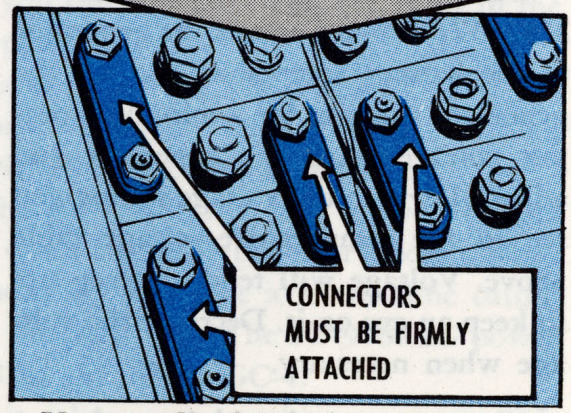



The electrolyte level in each cell should never be more than ¼ inch over the plate tops. When the level is right, it'll spew and flood only during emergency charging (17 amps for one hour) or overcharging.

**A WORD OF CAUTION: TESTS HAVE SHOWN THE OLD CHARGING PROCEDURES ARE NOT UP TO PAR.**

**Here's how you do it:**

**Place the battery on a clean, dry surface. Release the four fasteners, fold the cover back and remove the dust caps from the receptacles. If there is leakage, bad or missing connectors and loose or broken receptacle leads, send the battery to your direct support for repair.**




You can flip dried electrolyte (white powder) off the battery cells with a nylon brush.



PS MORE

Remove the vent caps with the nylon wrench inclosed in the battery, and either put the caps in distilled water or clean them with the nylon brush. Don't —DON'T—use chlorinated drinking water. Add distilled water to the battery if necessary, or lower the level with a syringe if it's more than ¼ inch above the plates.

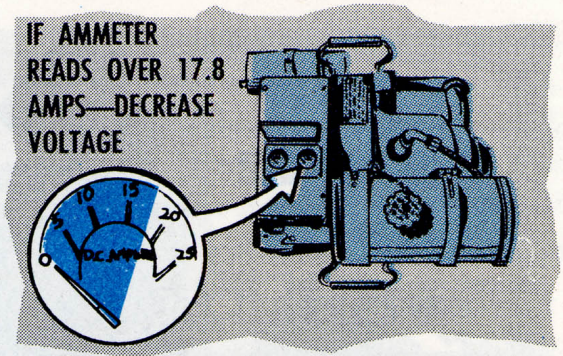
Using a generator set (Homelite Model 20.5 D28-23, for example) with the preferred constant potential method, hold the following charging voltages:

| Ambient Temperature | Voltage Setting |
|---|---|
| Below 0° F | 31.0 |
| 0° F to 32° F | 30.0 |
| 33° F to 80° F | 29.0 |
| 81° F to 100° F | 28.5 |
| Above 100° F | 28.0 |

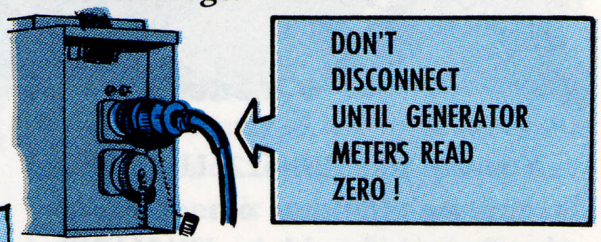
The charging rate will level off at 1.5 amps or less when the battery is fully charged (about two hours for a completely discharged battery and a half-hour or so for a moderately discharged battery).

Use cable CX-6367/U of Cable Kit MK-557/PPS-4. Connect the generator to the battery receptacle, and set the generator rheostat for a minimum output voltage. Start the generator and adjust slowly to the voltage setting you see in the temperature-voltage table above. Voltage will tend to creep up, so keep an eye on it. Decrease the voltage when necessary.

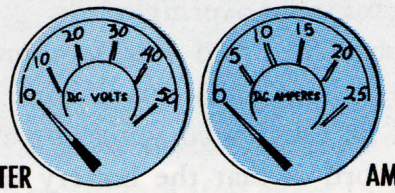
The ammeter shouldn't read over 17.8 amps. If it does, decrease voltage fast to avoid damage to the generator.




During charging, don't let the battery cells boil or spew electrolyte . . . or overcharge.




To avoid explosions or serious burns never disconnect the battery until the charging current has been cut off. The




VOLTMETER AMMETER

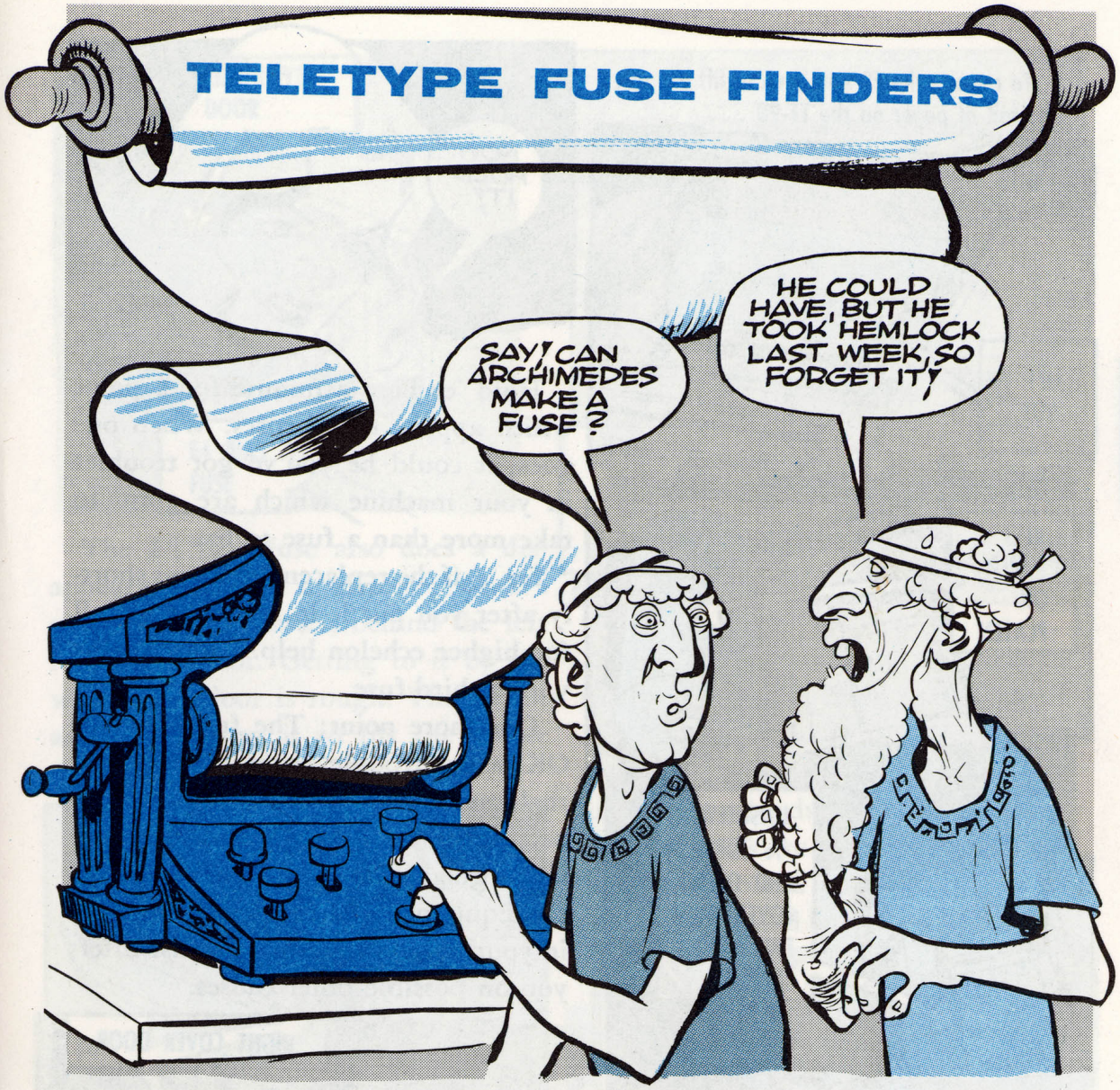
generator meters should first read zero (after the generator's turned off). Then, you can disconnect the battery.

Let the battery rest at least a half-hour after charging. Then, recheck the electrolyte level. Take the vent caps from the distilled water, dry them, and reinstall them. Put on the dust caps, close the cover, secure the fasteners—and you're back in business.

Just one other caution. Never charge the battery at 17 amps for an hour unless it's completely discharged. Even when the battery's completely down, decrease the charging rate as soon as she spews or boils.

Take care of your battery, and she'll work wonders for you—no sweat.

# TELETYPE FUSE FINDERS




Out of sight, out of mind.

That's an old rut, and just the kind you can slip into with the fuses in the TT-98( )/FG and TT-76( )/GGC teletypewriters.

Those fuses are important little items, and forgetting 'em is exactly what you shouldn't do . . . no matter whether you're using the teletypewriters with an AN/GRC-46, the AN/VRC-29, the AN/GRC-26 or what have you.

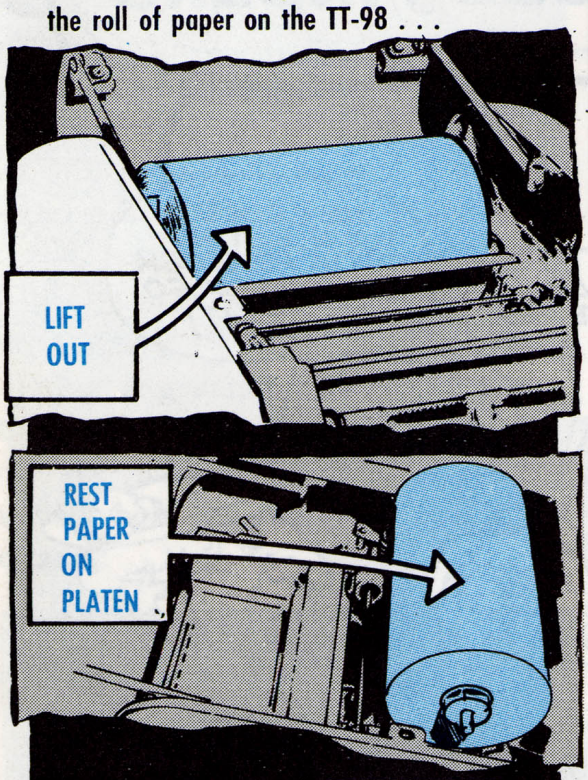
There's one item—the F2 fuse in the PP-978/FG—that's so well hidden you'd hardly suspect it was there. So, when the teletypewriter doesn't work right, some people who don't know about ol' F2 waste a lot of time callin' in a repairman and learnin' all about it the hard way. The PP-978/FG power supply, incidentally, changes the TT-98 to the AN/UGC-4.

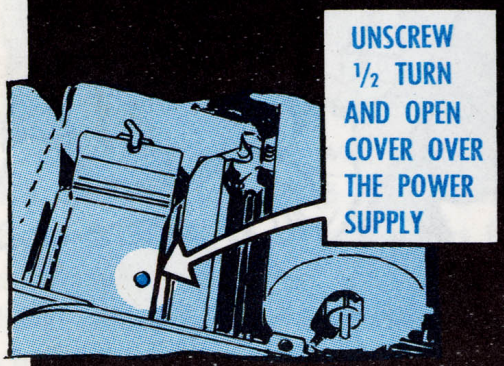
A good clue that the F2 has blown is when your machine runs open. It sounds like keys, carriage and every other moving part is goin' full blast . . . except nothing's goin'.



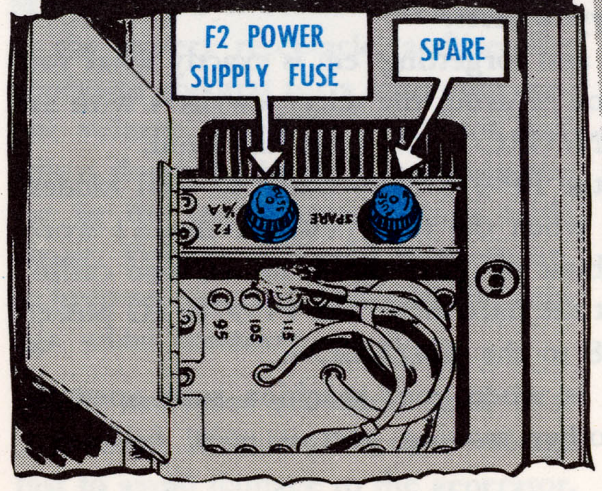
P.S. MORE

To remove the F2 you have to lift out the roll of paper on the TT-98 . . .



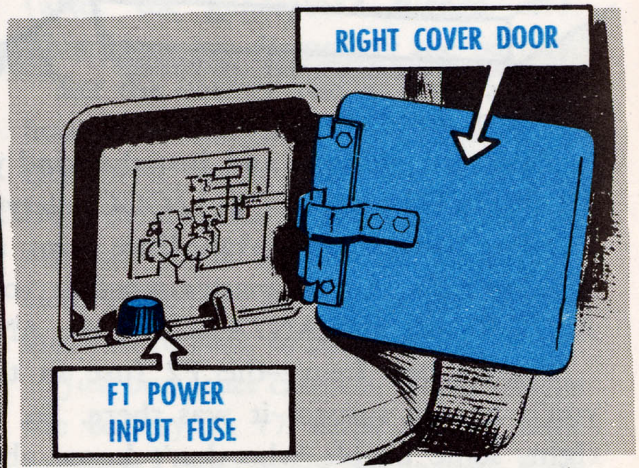

The fuse and a spare are under the cover.



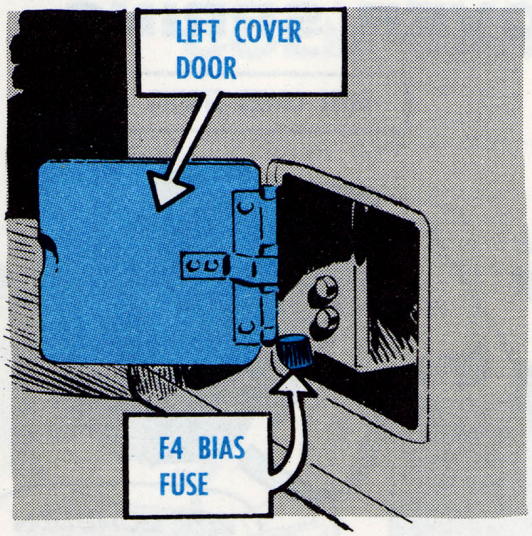
Hold 'er here a minute for a point which applies to all fuses. When one goes, it could be you've got troubles in your machine which are goin' to take more than a fuse to fix.

So . . . if the replacement blows shortly after you put it in, it's time to call for higher echelon help. Don't bother with a third fuse.

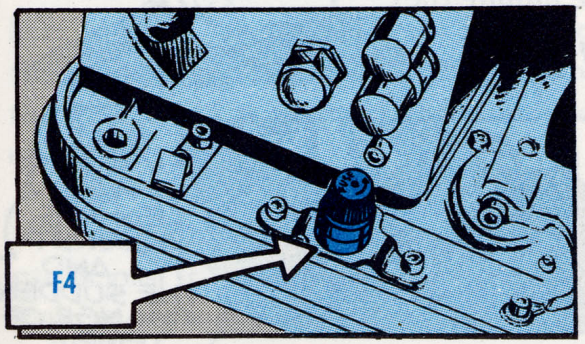
One more point: The fuses may be OK when trouble crops up, and the real cause may be from a loose connection or such. Check the fuse, and if it's good, that's the time to eyeball the Equipment Performance Checklist in your equipment TM. The list briefs you on possible other causes.



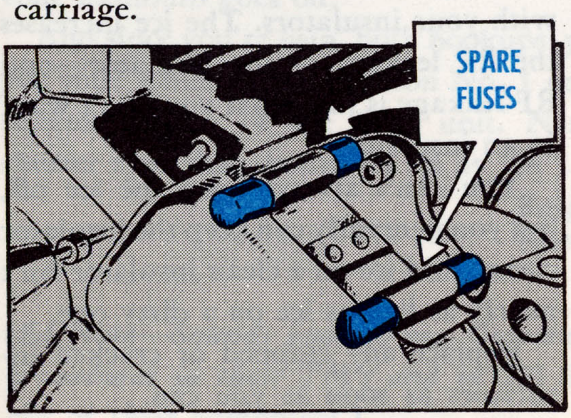

A second suspect in the TT-98 is the F1 power input fuse behind the right cover door. That rates a look quick-like if nothing happens when you turn on the light and motor switches.

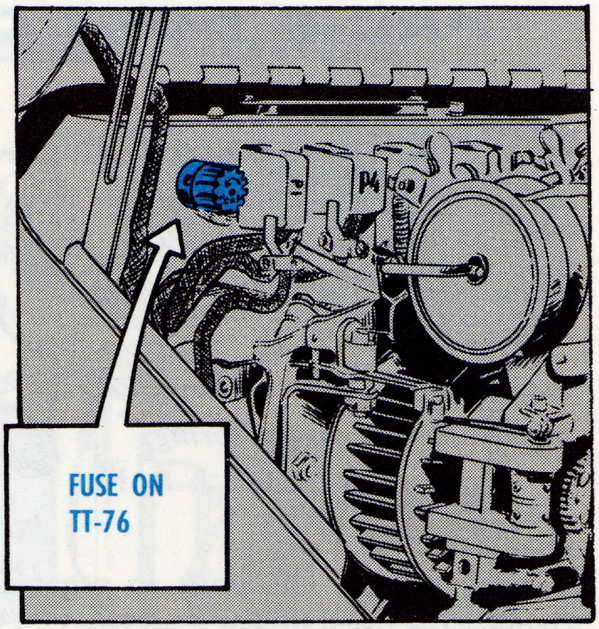



The F4 bias fuse also does a disappearing act, but it seldom pops. It's at the base of the set, behind the left rear cover door. Getting to it by the way of the door is rough. The fastest and easiest way is to lift the whole dust cover off the TT-98.



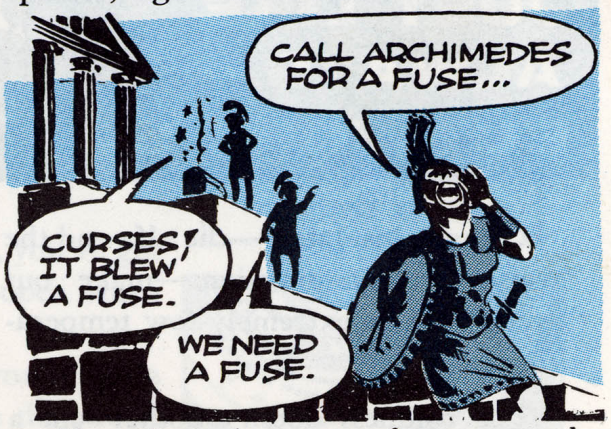

The spare power input fuses (F1, 2-amp) and spare bias fuses (F4, 1/16-amp) are on a bracket in front of the carriage.




The TT-76 has only one fuse to worry about, and there're two on the 76A and 76B. On all models, the fuses are on the power supply and terminal unit, under the dust cover.

Those fuses are usually blown when you draw a blank after turning on the power, light and motor switches.




Knowing where your fuses are and what happens when they burn out saves time and communications. And, besides those on your teletypewriters, knowing fuses on other components can keep you in business . . . especially in radio-teletype. Your TM's tell you what to look for, and where.



PS END

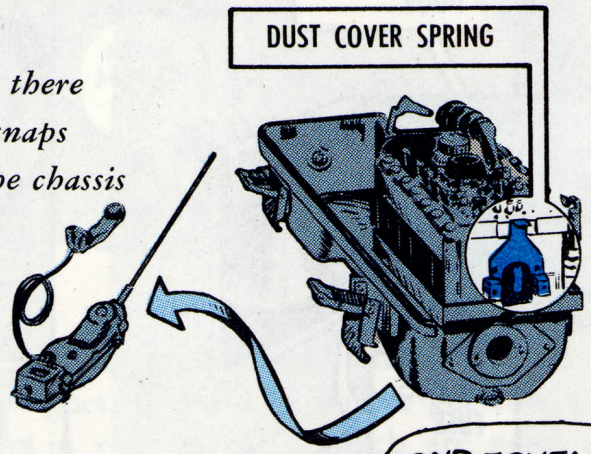
# PRC-6 DUST COVER SPRING

*Dear Half-Mast,*

*Do we have to cannibalize, or is there an FSN for the leaf spring which snaps the dust cover (chassis shield) to the chassis of the AN/PRC-6 radio?*

*We've looked in all the organizational pubs we have, and there's nothing on the spring.*

**Pfc J. P. N.**




Dear Private J. P. N.,

That spring's off limits to organizational mechanics. It's listed in TM 11-5820-355-35P, Change 1, and its replacement is a third echelon job.

Removing the chassis to replace the spring can get complicated. And since it's important to keep that dust cover snugly in place, it's a good idea to get your set off to your support unit the minute the spring no longer does its job.

*Half-Mast*

# JUST LIKE ALWAYS — BUT MORE SO

Ceramic insulators—the alfa and the zulu of communications—make out pretty well in extremely low temperatures.

The coldness doesn't bother 'em a whole lot—and everybody's in the habit of treating 'em real gentle-like to begin with.

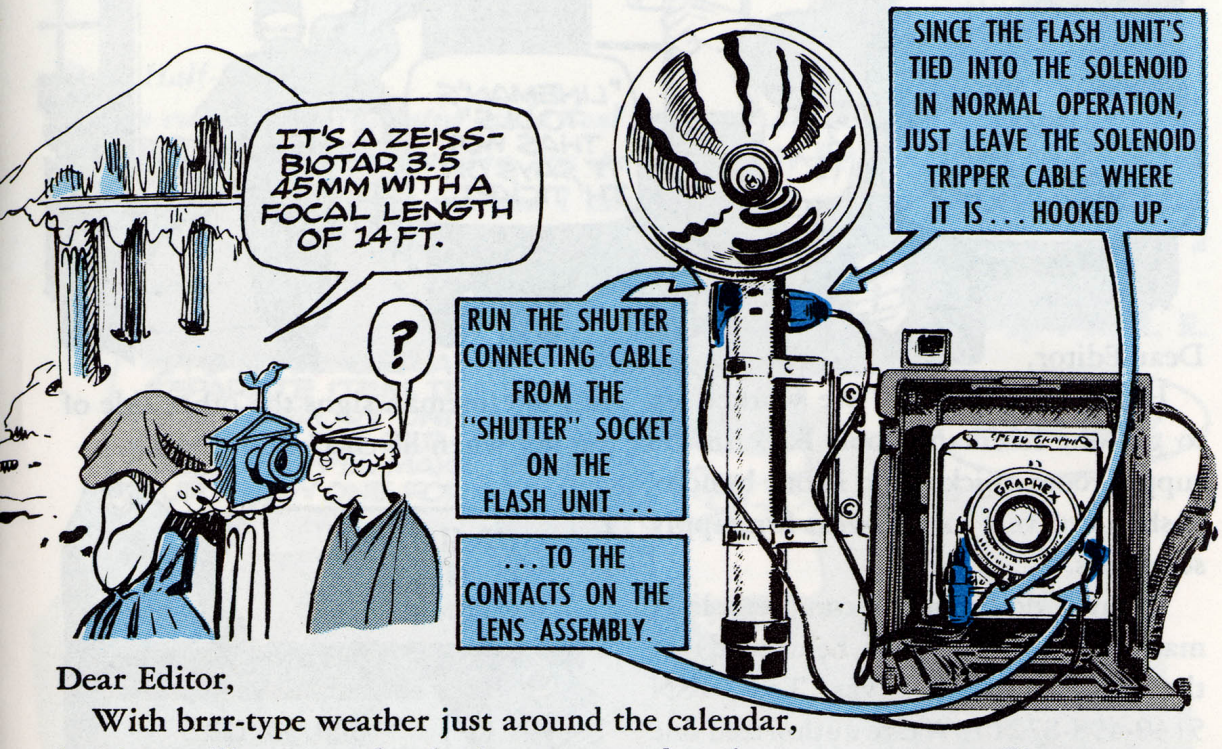
But a real sudden change in their temperature—from hot to cold or from cold to hot—can shatter them—otherwise they hold up fairly well when they're handled real easy.

It's the ice that comes with cold weather that causes the most trouble with your insulators. The ice increases the RF leakage of the insulator—and RF leakage is just what you don't want in an insulator.

You can't always keep the ice off, but you generally can keep the insulator clean. And ice on a clean insulator isn't nearly as bad as ice on a dirty one.

Replace any chipped or cracked insulators as soon as you can.

# COLD CAMERA CURES




Dear Editor,

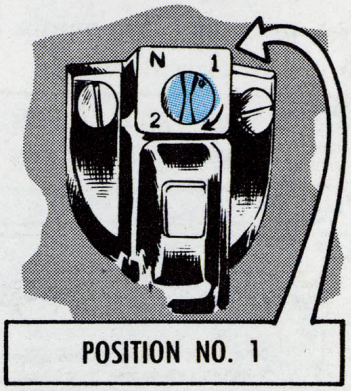
With brrr-type weather just around the calendar, here's a still camera fix that's guaranteed to have the shutter open when the flashbulb pops. Providin' the flash unit has solenoid and shutter connections, of course.

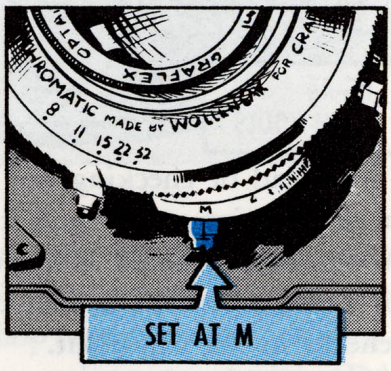
Cold weather affects solenoid operation and shutters, and with a solenoid connection only, a flashbulb can be past its peak when the shutter opens. It could make a photographer think his camera was out of synchronization.

With a solenoid AND shutter hookup, you've got insurance that the shutter will be full open when your flashbulb goes off.

And since you're usin' both hookups, you've gotta put your white dot at Position No. 1 on the circuit selector switch of the flash unit. Naturally, the shutter sync dial should be set at "M".

**Ralph Rigg**
**Fort Knox, Ky.**



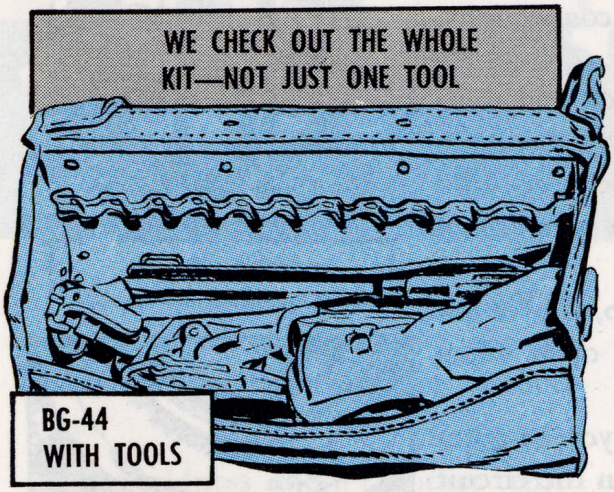




*(Ed Note—Sounds good to me. Cameramen also should check out cold weather procedures in their TM's and in TB SIG 189, dated Dec 58, to get the best out of their equipment.)*

Dear Editor,

Here's a "bag trick" we worked up to get our lineman's tools back in the supply room quicker and in one bundle. It should save a lot of sweat for supply sergeants.

What I do is put a complete lineman's kit (all the tools he'd need) in the BG-44 (Bag, Canvas, Tool, FSN 5140-498-8721). We're authorized one bag per each lineman's kit (TE-21), so it works real well.




Instead of checking out one tool at a time we issue the whole kit, wrapped nicely in the BG-44. When the lineman is through with the tool or tools, he checks in the whole kit.

We attach a paper tag to the BG-44 when it's in the supply room. One side of the tag lists every tool in the bag, and the lineman signs the other side of the tag when he checks out the kit.

The system guarantees that we'll have the equipment on hand—or know where it is—when we need it. And it beats trying to locate the tools, or handing them out, one by one.

We have a better inventory control, and since the kits rarely are out more than a day, it works very well.

**Sgt Norman Counts**
**812th Sig Co**

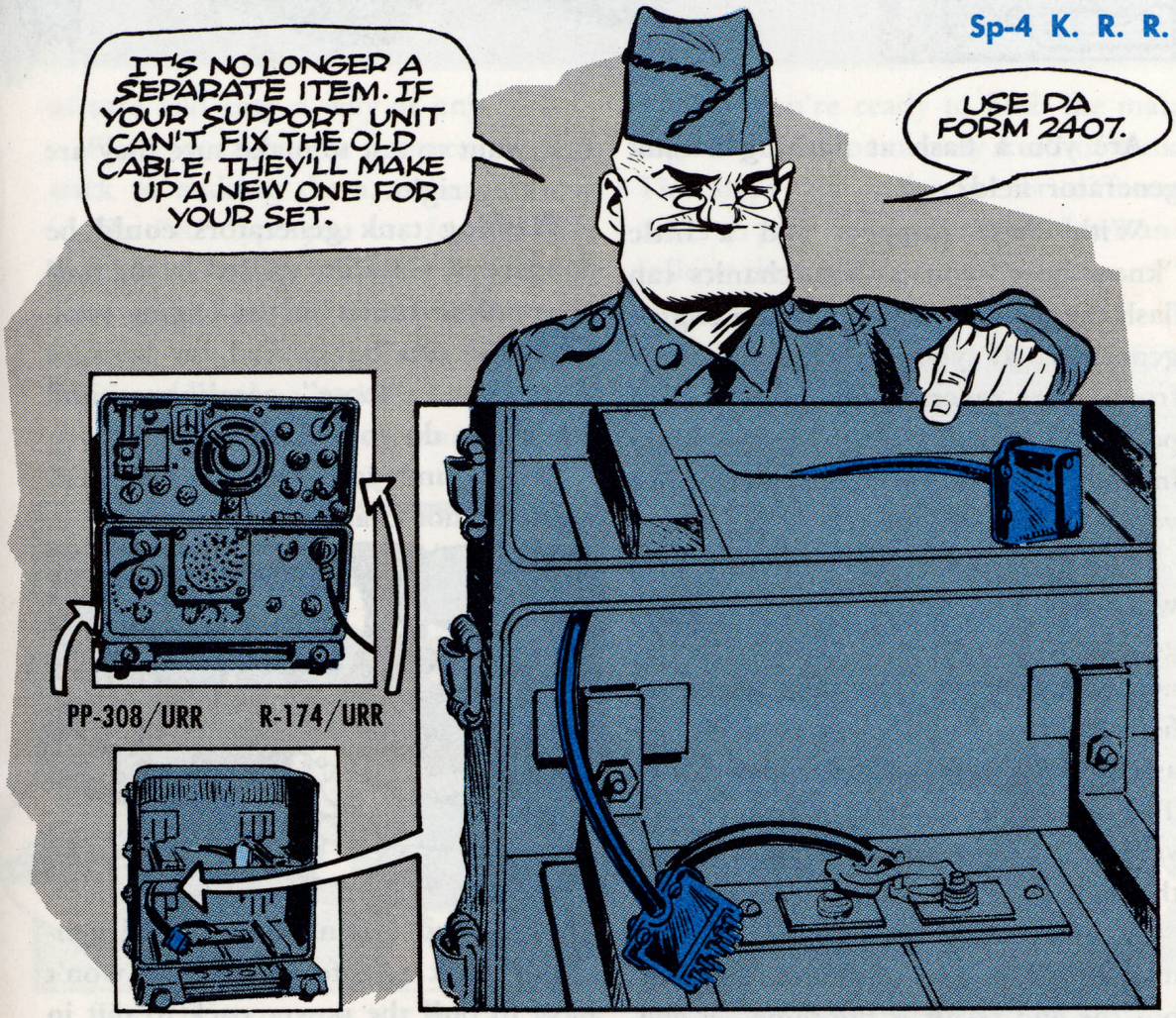
(Ed Note—Sounds like a real good way to get the tools home.)

# RECEIVER-POWER SUPPLY CABLE

*Dear Half-Mast,*

*I've run into a frustratin' little deal with my AN/GRR-5 receiving set. The interconnecting cable between the power supply PP-308/URR and receiver R-174/URR is on the blink and I can't find any way to get a replacement. None of the pubs I have on hand give me any dope on this. How do I get a new cable?*

**Sp-4 K. R. R.**

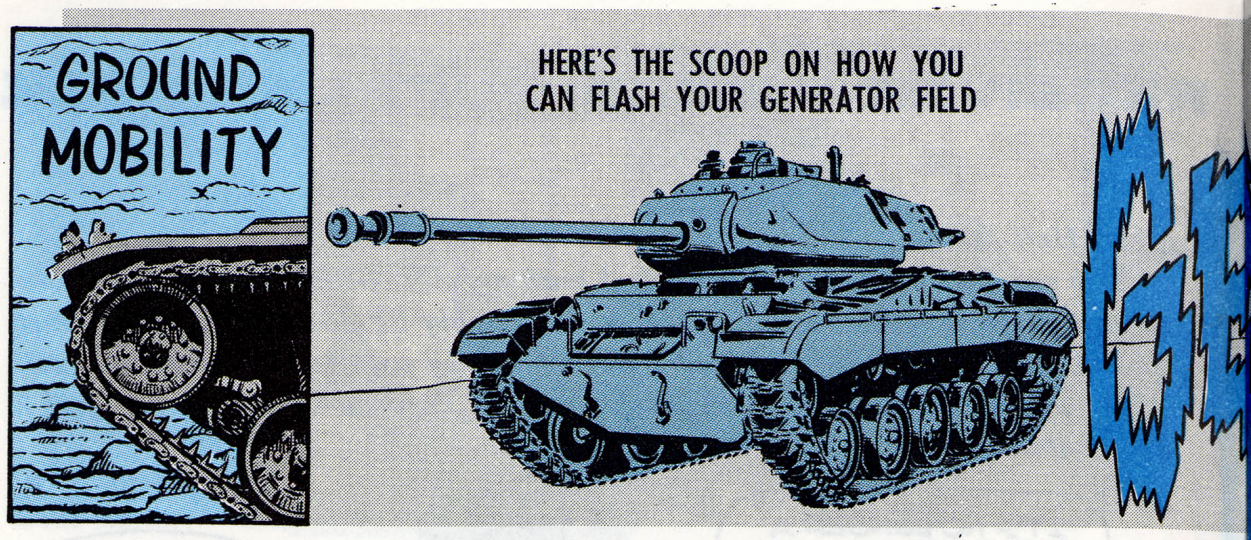



Dear Specialist K. R. R.,

I'm right with you. That cable used to be carried as a separate item, with its own stock number, etc. But somehow or another it got dropped as a separate assembly, and now it's made up by your support shop from a number of parts.

So convert your DA Form 1546 supply action to a maintenance action (DA Form 2407), and have your support unit work over your cable. If they can't repair it, they'll make you up a new one.

*Half-Mast*




Are you a flash at flashing a tank generator field?

With these jumpers and a little "know how" you tank mechanics can flash the **field** in any tank main engine generator. If your generator suffers from either reverse polarity or loss of polarity this will cure it. Before flashing the generator field be sure your vehicle's battery polarity is correct.

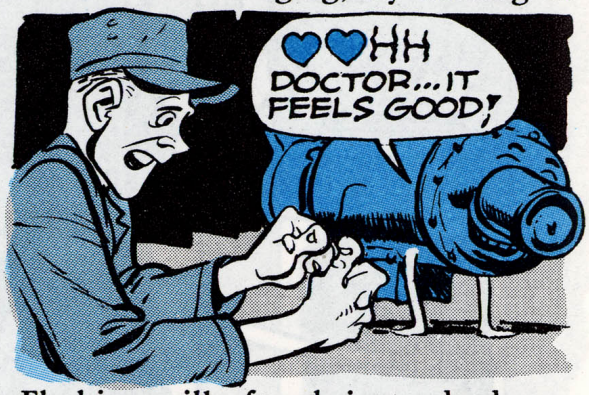
You need to flash the generator field whenever you put a new or rebuilt generator into service. Flashing is also needed whenever your tank generator field loses its "residual magnetism"—as the electrical engineer types call it. The object is to have current from vehicle batteries momentarily flowing through field coils of the generator.

A generator can lose its residual magnetism for a lot of different reasons, but the end result is the same—a generator that's not charging.

It's easy to tell if your generator is not charging because the generator warning light goes on or the needle in the Battery-Generator indicator stays in the yellow, depending on which way your tank is equipped . . . o'course you first want to test to make sure they are working right.

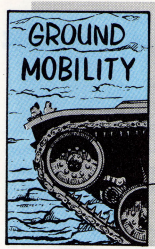
Flashing tank generators **could** be dangerous. Gasoline spilled in the hull or gasoline fumes in the engine compartment can be ignited, so be sure there is no "loose" gasoline around when you do your flashing.

If you find your main engine generator is not charging, try flashing it.



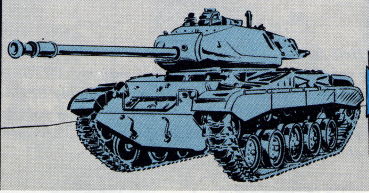

Flashing will often bring a dead generator back to life. Then you won't have to pull the power pack to put in a new generator.

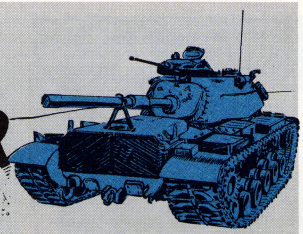
You flash a tank main engine generator by feeding current from your batteries for a second through the No. 1 circuit to the generator field. There are more ways to do this than there are recipes for Irish stew, but this is




HERE'S THE SCOOP ON HOW YOU CAN FLASH YOUR GENERATOR FIELD

# GENERATOR JUMPER





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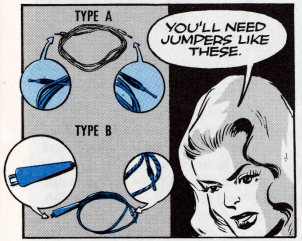
First you need the jumpers . . . no trick to making them, either.

The "A" type you use for the M41 and M41A1 tanks takes five feet of wire (any good electrical cord will do) with a male contact pin, FSN 5935-752-7655, soldered on each end. These pins are stocked in electrical connector tool kit FSN 5180-708-3423.



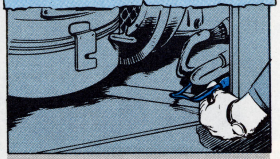

The "B" type you use for all other tanks is a three-foot cord with the male contact pin on one end, an alligator clip on the other. A protective rubber cover over the alligator clip dresses it up but if you can't find one, a couple of turns of insulating tape will do the job just as well.

Now you're ready to flash the main engine generator on any kind of tank. The steps are different for different tanks so pick out the kind you have and follow through by numbers.

## FOR M41-SERIES TANKS

1. Take off the right air cleaner access door.

2. Reach your hand in and disconnect the bottom (lowest) of the three connectors behind the access door. You can't make a mistake because it is the only small connector. Also, the cable has only three female sockets (receptacles).



3. Unhook the loader's dome light power line.

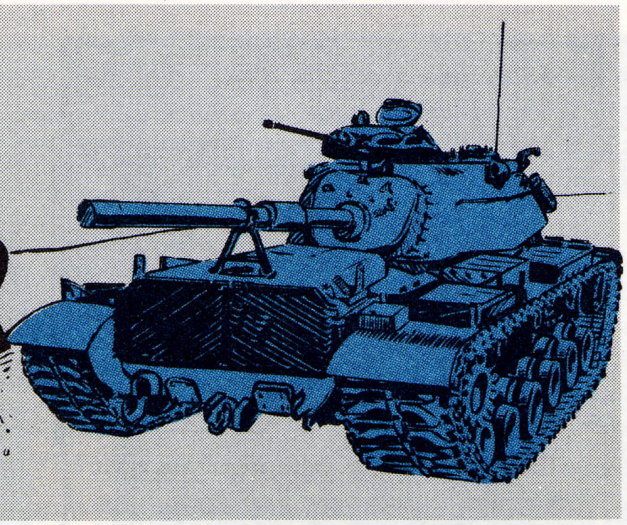
4. Put one end of the "A" type jumper into the "A" receptacle in the cable you unhooked back of the access door. (The "A" is marked on the rubber of the receptacle. Besides, this is the socket that'll be at your left hand when you have the keyway turned UP.)





PS MORE

# GENERATOR JUMPER



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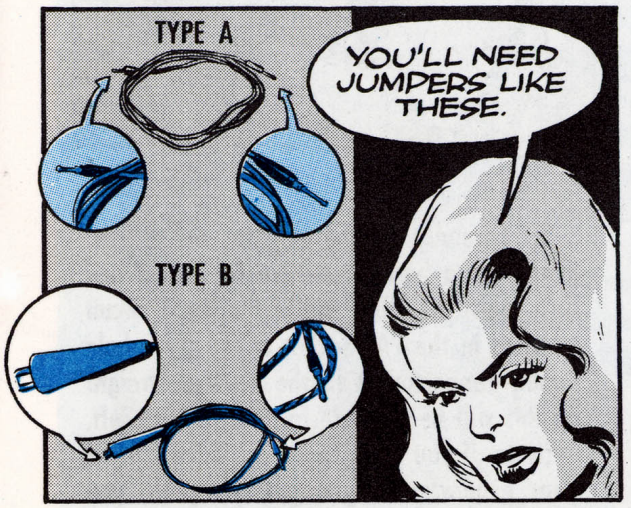


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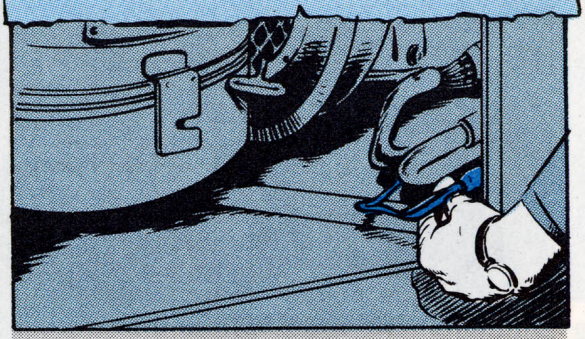

3. Unhook the loader's dome light power line.

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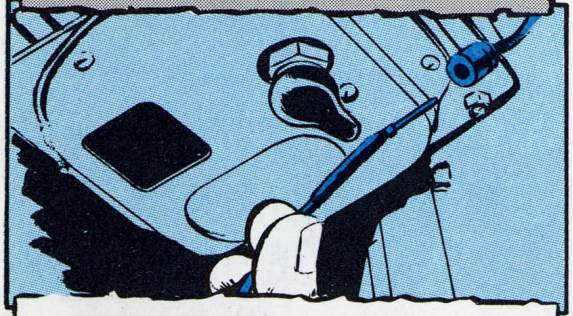
PS MORE

5. Carefully touch the other end of the jumper to the dome light power line.

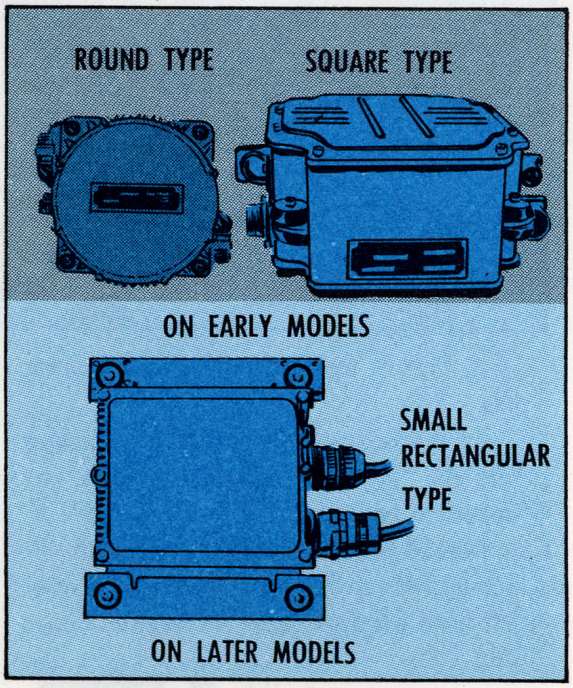


(Note: If there is a spark when you make this contact it means you have flashed your generator field circuit. If there is no spark it means you have an "open" in your generator field circuit.)

6. Put everything back the way it was and start up your engine. The generator should begin to charge and the warning light should go out.

If flashing won't cure the trouble, go through the tests in para 173 of TM 9-2350-201-12 (Jul 58) to see if it is the generator, generator regulator or the wiring that is at fault.

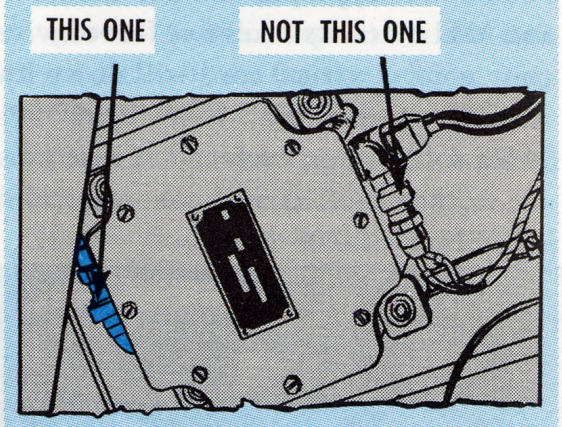
There are three kinds of tank generator regulators:




## FOR M48 AND EARLY M48A1 TANKS

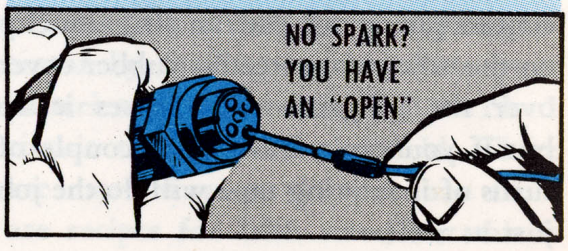
If your tank has either the round or the big, square type regulator, use the "B" type jumper and follow through by the numbers . . .

1. Flip OFF the master switch.
2. Pull up the hull access door.
3. Position the turret so you can get at the regulator and also the battery.
4. Unscrew the generator field circuit cable. (It is at the 45° bend receptacle that does **not** have a ground strap.) If you make a mistake and get the wrong one you'll know about it right away because only the generator field circuit cable ends in a three socket female connector.




5. Carefully clip the alligator end of your jumper to a battery positive (+) post and then touch the other end to the No. 1 circuit which is in the "A" socket of the three hole female connector. With the keyway straight up this will be the hole farthest to your left.

(Note: If you get a spark you have flashed your generator. If you get no spark, you know there is an "open" in your generator field circuit.)



6. Put everything back the way it was and start your engine. Your generator should now begin to charge. When this happens the generator warning light will go out or the Batt-Gen indicator needle will move into the green, depending on how your tank's equipped.

If flashing won't get your generator to charging, go through the troubleshooting tests in the maintenance TM for the vehicle to find out if the trouble is in the generator, generator regulator, or the wiring.

## LATE M48A1'S, M48A2'S, M60'S AND M60A1'S

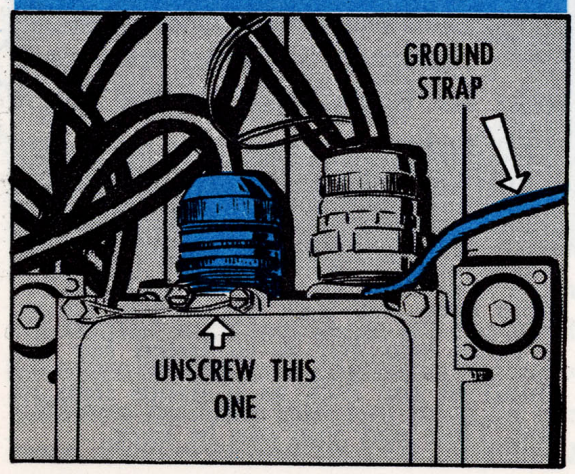
These models all have the small, rectangular generator regulator, FSN 2920-338-4264. You flash the generator on these tanks like so . . .

1. Turn OFF the master switch.

2. Open the battery access plate in the turret platform floor.

3. Manually traverse the turret until the generator regulator and one of the batteries are beneath the opening.

4. Unscrew the connector on the generator side of the generator regulator. (There are two connectors side by side. Unscrew the one with the word GENERATOR stamped on the box above it. This is the one **without** the ground strap. Look at the cable. If it ends in male pins you are OK. If not, you have unscrewed the wrong one.)



5. Locate pin "D". Look for the two small pins closest to the two big pins. It is the one you would come to first starting **counterclockwise** from the polarizing keyway.

6. Hook the alligator clip end of your jumper to the positive (+) post of the battery.

7. Handling your jumper carefully so's not to touch anything else, bring the tip into contact with pin "D".

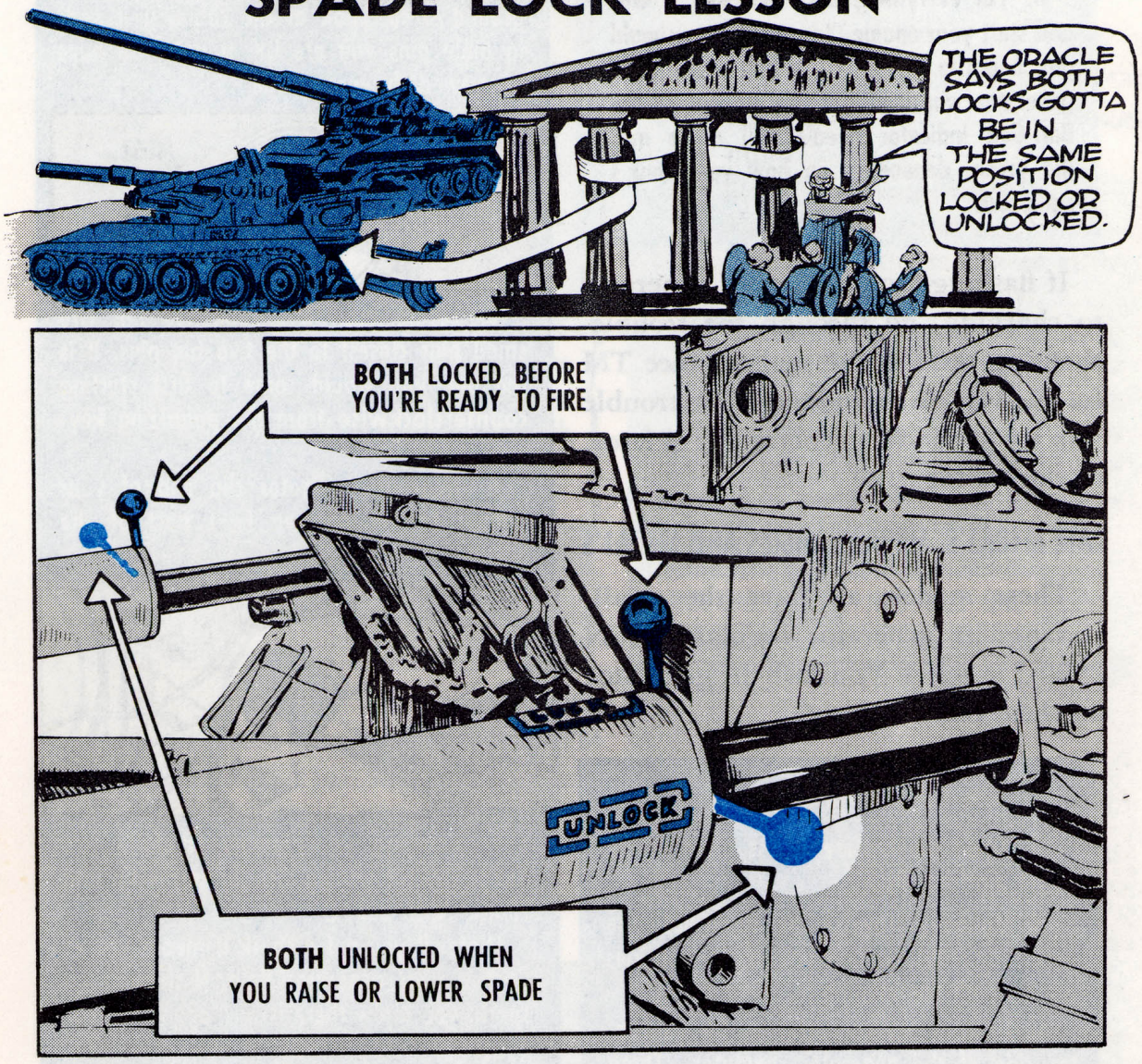
(Note: If you get a spark it means you've flashed your generator field. If there is no spark, you know there is an "open" in your generator field circuit.)

8. Put everything back the way it was and then start your engine. Your generator should now begin to charge. You can tell because the Batt-Gen Indicator needle moves into the green.

If your generator won't charge, go through the troubleshooting tests in the maintenance TM for the vehicle to find out if the trouble is in the generator, generator regulator or the wiring. However, flashing the generator will cure your trouble if reverse polarity is at fault or the generator field has lost its residual magnetism.

END

# SPADE LOCK LESSON




It takes two to tango, but, more important for you M107 SP 175-mm gun and M110 SP 8-in howitzer "owners" is another twosome—the two locks on the recoil spades.

Those two locks gotta be in step or you're in trouble.

Have them either both ON or both OFF, but never in assorted positions.

If you try to lower the spade and one side is still locked you'll break the lock on that side.

If you try to raise the spade with one side locked the lock will hit on the recoil spade cylinder and break off.

Both locks have to be in the unlocked position when you raise or lower the spade. Likewise, both spade locks are to be locked before you're ready to fire.

Just to make things tougher, there are no stops on the spade locks and if you go too far when you try to unlock them they will lock up on you again.

Your best bet is to listen for the sound of the lock as it drops into its slot. That way you can be sure.

## STAMPING ACTION

Having some troubles getting your hands on ¼-in number and alphabet die sets for stamping the service dates on your batteries per TM 9-6140-200-15 (Jul 58) and Change 1 (Jan 62)?

The Metal Die Sets, Numerical, FSN 5110-289-0003, and Alphabet, FSN 5110-289-0007 were recently put into your No. 2 Common Tool Set FSN 4910-754-0650 . . . which means you can latch right onto 'em. See Change 1 to SM 9-4-4910-A86 (17Jul 63) for the published word on this.

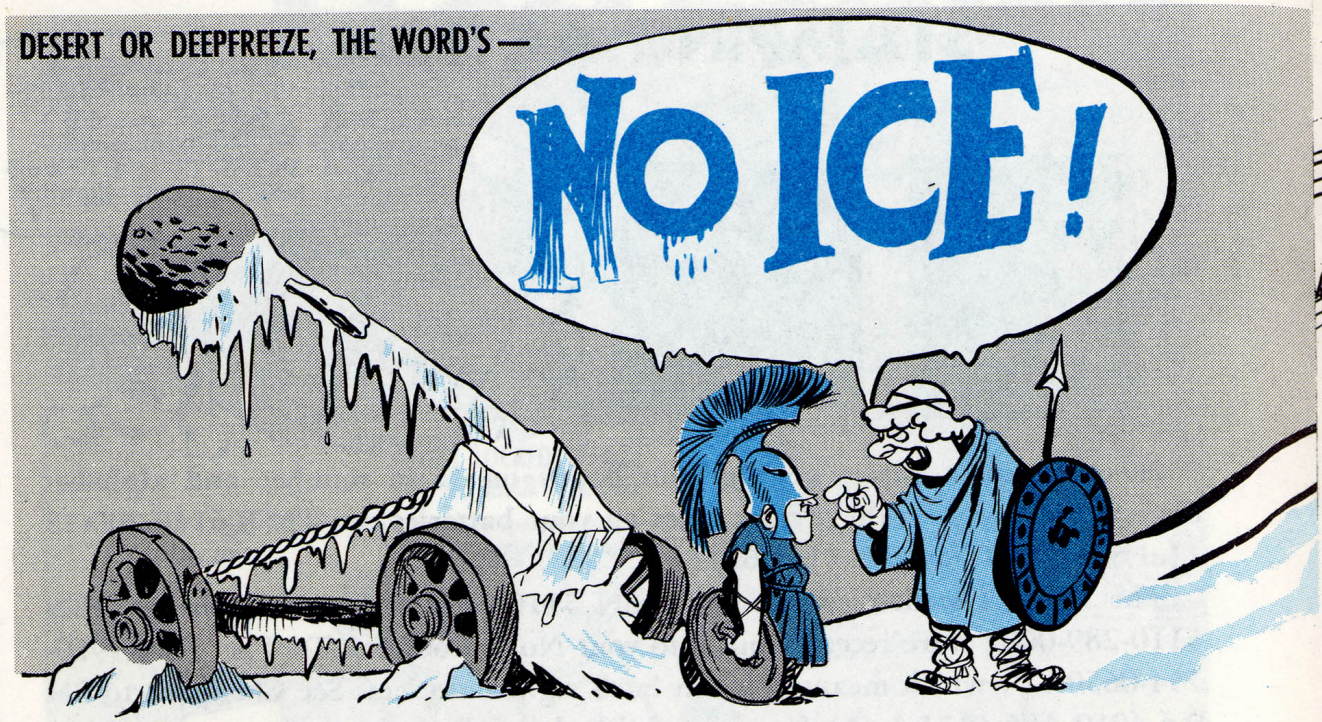
## M37 TRUCK TIRE PRESSURE

What's the correct tire pressure for your M37 or M37B1 ¾-ton truck? Well, some of the vehicle data plates say 40 PSI and some say 45 PSI. The ones that say 40 PSI are right. So if you have a data plate that reads 45, blot out the 5 and stamp in an 0 in its place like it tells you to in TB 9-2320-212-20/3 (July 62).

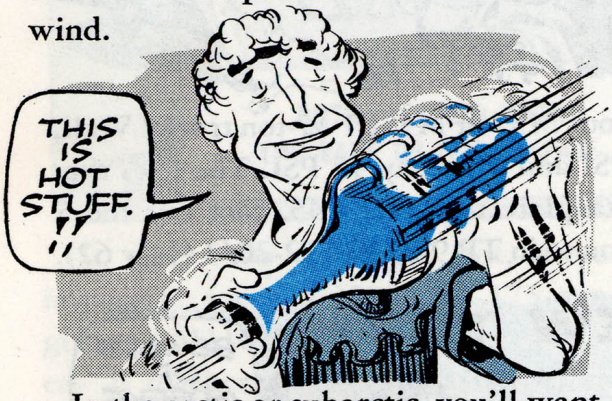
## M48A3 NEW TANK

The M48 tank family has a new member that some of you tankers'll be getting acquainted with real soon. It's the M48A3 tank which is an M48A1 rebuilt to have the same diesel engine as the newest M60A1 tanks. It also has the M73 7.62-mm machine gun you fired on the M60 and M60A1 tanks. The 90-mm main armament and the .50 cal HBM2 are the same as on the M48A2.

DESERT OR DEEPFREEZE, THE WORD'S—




The word for the cooling system on your liquid-cooled engines is "NO ICE!" And that goes, even when your equipment's operating in a northern deepfreeze where the snowshoe rabbit travels with flaps down and nose downwind.




In the arctic or subarctic, you'll want to use nothing but straight arctic grade antifreeze—FSN 6850-174-1806 for a 55-gal drum.

This arctic-type ice chaser has all its components pre-mixed so it'll give you the last rock-bottom degree of protection. So you never mix it or dilute it with anything. Anything you add would only lower its resistance to icing.

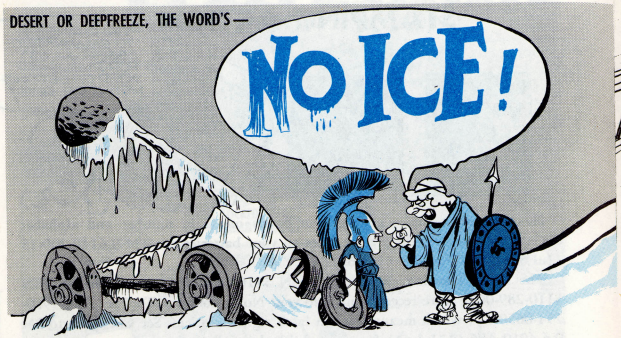
That's why you make sure the system's completely drained—including engine block and all lines and hoses—before filling with the arctic-type. And when you need more coolant, you add only more of the same pre-mixed arctic antifreeze.

Other places, where the climate's mild enough for ethylene glycol antifreeze, you'll need a formula for mixing. Ethylene glycol needs the right amount of water to build up its antifreeze power.

The more ethylene glycol you use, the more its resistance to freezing builds up—up to 60 percent ethylene glycol, that is. After you get 60 percent ethylene glycol, adding more to the coolant mixture causes its antifreeze power to drop.

To put it another way, once you've got a solution of 60 percent ethylene glycol and 40 percent water, you subtract antifreeze protection if you add either water or ethylene glycol.

DESERT OR DEEPFREEZE, THE WORD'S—

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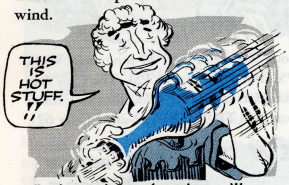


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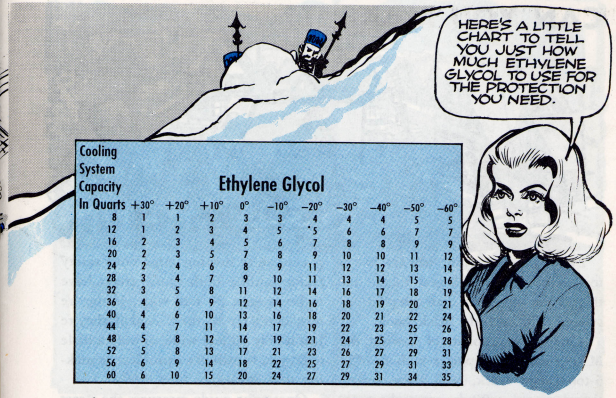



| Cooling System Capacity In Quarts | Ethylene Glycol +30° | +20° | +10° | 0° | −10° | −20° | −30° | −40° | −50° | −60° |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 |
| 12 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 7 |
| 16 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 8 | 9 | 9 |
| 20 | 2 | 3 | 5 | 7 | 8 | 9 | 10 | 10 | 11 | 12 |
| 24 | 2 | 4 | 6 | 8 | 9 | 11 | 12 | 12 | 13 | 14 |
| 28 | 3 | 4 | 7 | 9 | 10 | 11 | 13 | 14 | 15 | 16 |
| 32 | 3 | 5 | 8 | 11 | 12 | 14 | 16 | 17 | 18 | 19 |
| 36 | 4 | 6 | 9 | 12 | 14 | 16 | 18 | 19 | 20 | 21 |
| 40 | 4 | 6 | 10 | 13 | 16 | 18 | 20 | 21 | 22 | 24 |
| 44 | 4 | 7 | 11 | 14 | 17 | 19 | 22 | 23 | 25 | 26 |
| 48 | 5 | 8 | 12 | 16 | 19 | 21 | 24 | 25 | 27 | 28 |
| 52 | 5 | 8 | 13 | 17 | 21 | 23 | 26 | 27 | 29 | 31 |
| 56 | 6 | 9 | 14 | 18 | 22 | 25 | 27 | 29 | 31 | 33 |
| 60 | 6 | 10 | 15 | 20 | 24 | 27 | 29 | 31 | 34 | 35 |

As you can see, you need to know the capacity of your engine's cooling system to get the right mix. Your equipment's TM should be your guide. F'rinstance, if its capacity is 24 quarts, you follow the "24 Quart" column straight across to the degree of protection you need.

The figure there is the amount of ethylene glycol you need (in quarts) for that degree of protection.

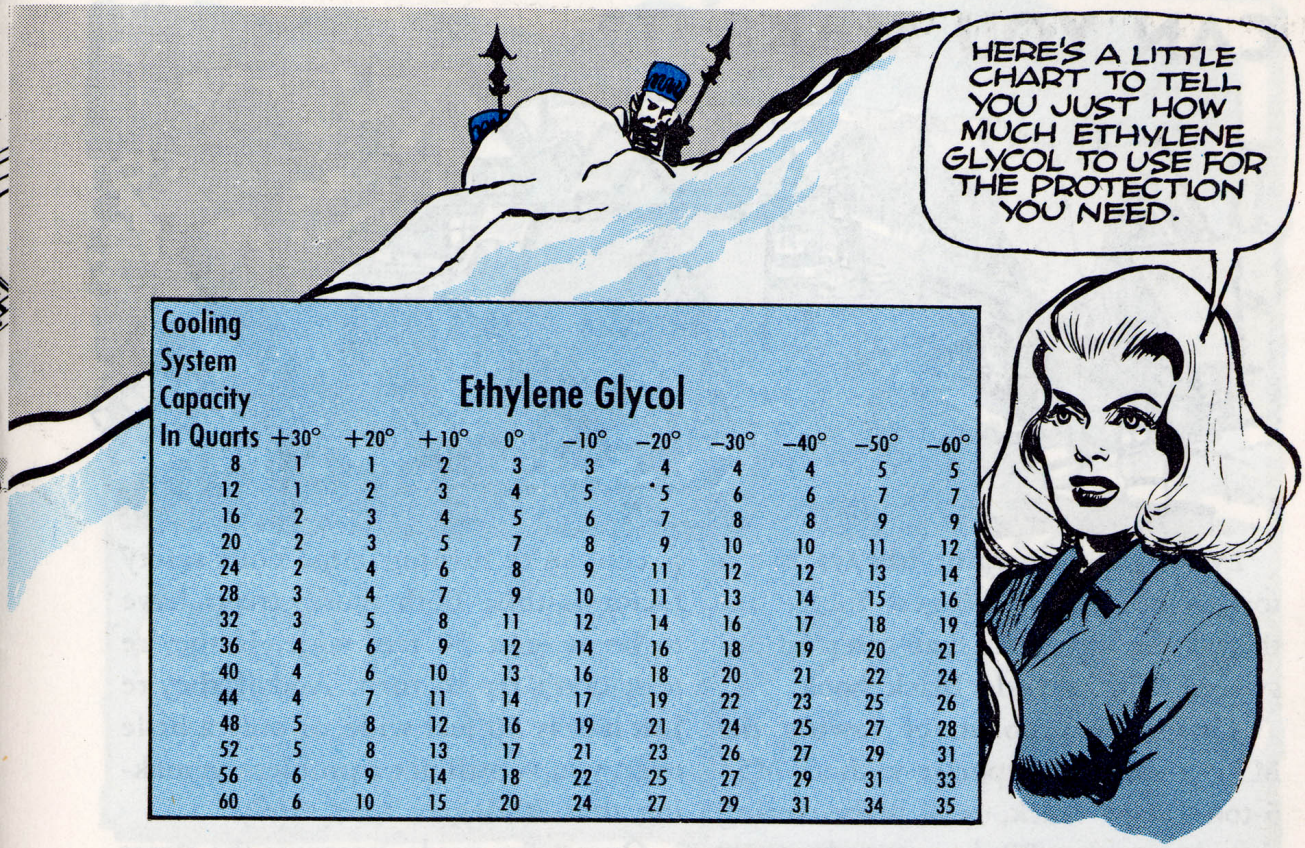
Just in case the equipment's been modified (maybe extra connecting hoses plus a heater or other doodad have been added), you may find the system's capacity figure in the TM is not correct. Then it'll pay to drain the cooling system and measure the amount of water it takes to refill it.

Anyway, once you know your capacity, you're ready to start mixing. And the ethylene glycol comes with four FSN's, depending on your needs.

6850-243-1992 — 1-gal can, domestic packed.
6850-243-1993 — 1-gal can, export packed.
6850-224-8730 — 5-gal container.
6850-243-1990 — 55-gal drum.

And, no matter what formula you use, it's best to check your antifreeze with a hydrometer.

That's the sure way to guard against ice in your engine.

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|---|---|---|---|---|---|---|---|---|---|---|
| | +30° | +20° | +10° | 0° | −10° | −20° | −30° | −40° | −50° | −60° |
| 8 | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 |
| 12 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 7 |
| 16 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 8 | 9 | 9 |
| 20 | 2 | 3 | 5 | 7 | 8 | 9 | 10 | 10 | 11 | 12 |
| 24 | 2 | 4 | 6 | 8 | 9 | 11 | 12 | 12 | 13 | 14 |
| 28 | 3 | 4 | 7 | 9 | 10 | 11 | 13 | 14 | 15 | 16 |
| 32 | 3 | 5 | 8 | 11 | 12 | 14 | 16 | 17 | 18 | 19 |
| 36 | 4 | 6 | 9 | 12 | 14 | 16 | 18 | 19 | 20 | 21 |
| 40 | 4 | 6 | 10 | 13 | 16 | 18 | 20 | 21 | 22 | 24 |
| 44 | 4 | 7 | 11 | 14 | 17 | 19 | 22 | 23 | 25 | 26 |
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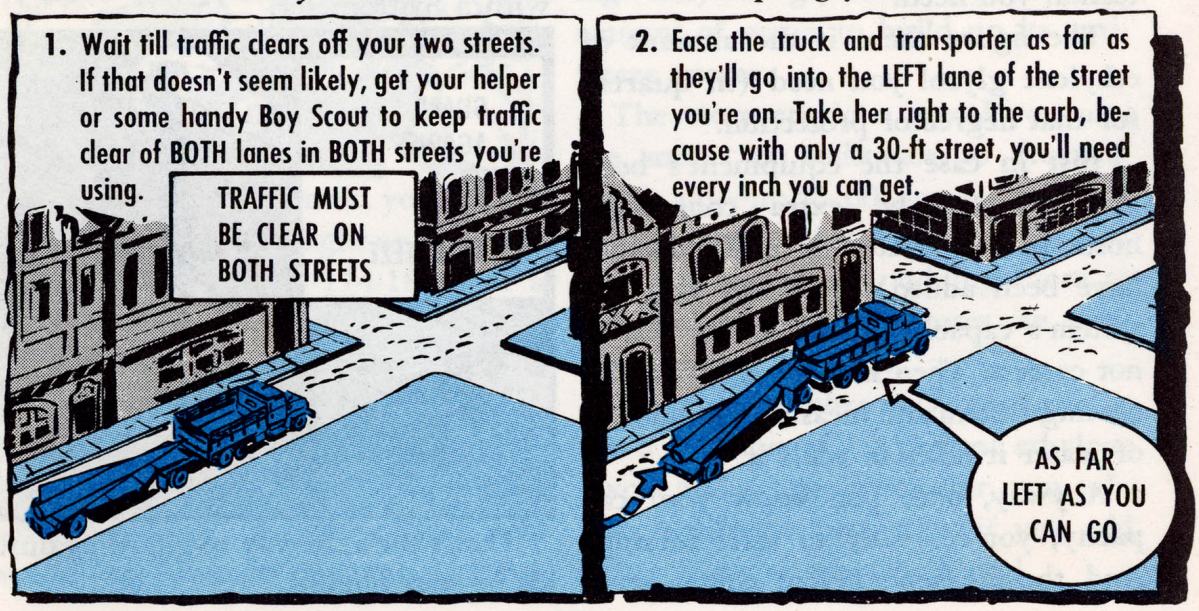
# CAN YOU MAKE IT?

Every good operator always has a town cased before he gets there. But there's one problem that can't be answered with a little black book.

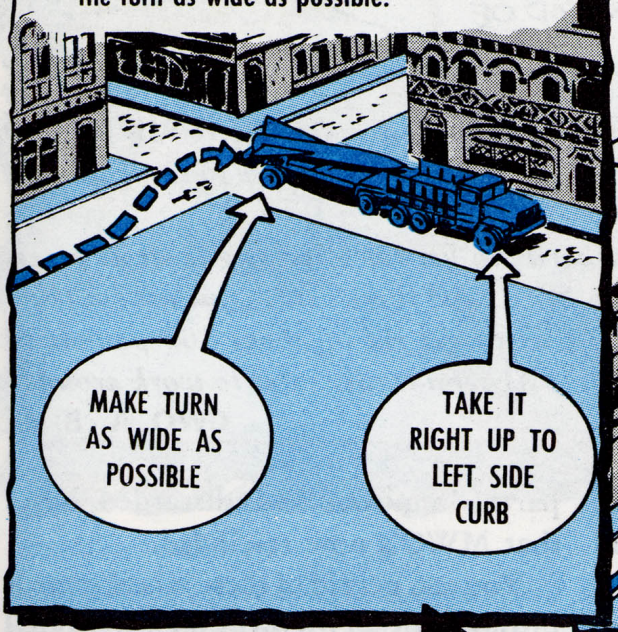
That's the problem of towing the M529 missile transporter with an M54 5-ton cargo truck, and maneuvering them around a 90-degree right turn.

When you see the streets in a town are narrow, don't drive right up to the intersection and then start figuring out how to make that 90-degree right turn. Pull over in a safe place, and send someone up to measure the distance of the streets—the street you're on and the street you're turning into. Your safety factor is this: Both those streets have to be at least 30 feet wide. If they're less, don't try to turn. And if they're just barely 30 feet wide, or only a little over, you've still got a problem in making that 90-degree turn safely.

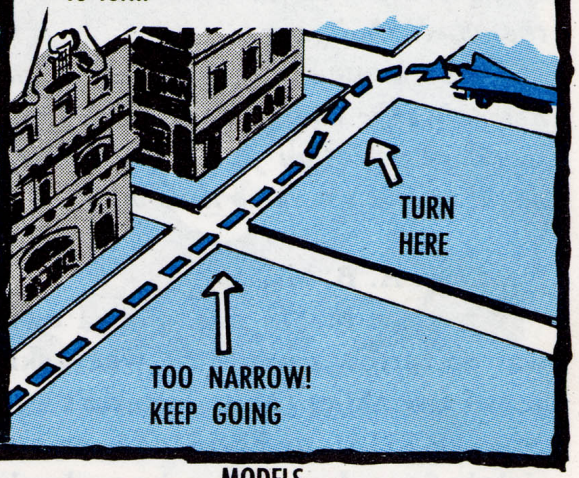
Once your guide measures the street and you know you've got only 30 feet or so to turn in, take it by these numbers. If you don't, and only get halfway around the bend and get stuck, the city fathers might have to move a few telephone poles, fire hydrants and pool rooms to spring you loose.



3. Swing the truck around the corner slow and easy, taking it as close as possible to the curb in the LEFT lane of the street you're turning into. In other words, make the turn as wide as possible.

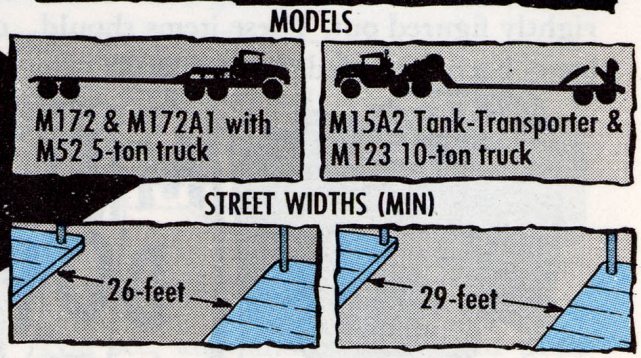



4. You and your ground guide keep a sharp eye out to be sure the missile and transporter clear the corner they're passing closest to. If it looks like she's going to hit, back her up and start over. Or, if it looks like your guide figured the width of the street wrong, and the street's too narrow, don't try the turn. Go straight through the intersection and hunt for a better place to turn.




Naturally, if you figure the street's too narrow in the first place, you'll go straight through, if it's possible to do so.

If you happen to be driving one of these combinations, best you keep these street widths in mind.



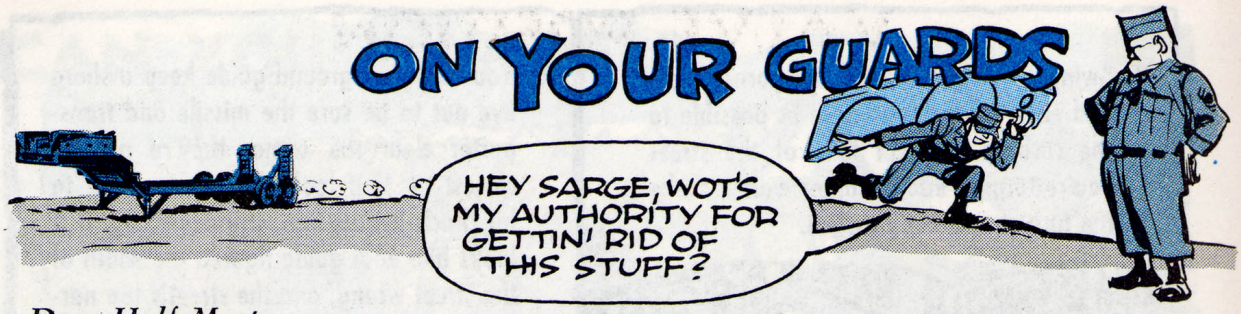

When using these two combinations there's another way to try to maneuver around the turn, if you find the streets a bit on the narrow side. It'd be right tricky to work it with the M529 combo.

You can proceed right on thru the intersection (when possible) far enough so you can back the hind-end of the trailer into the opposite intersecting street. Back up enough so's to make with the turn.

The "when possible" business comes into the picture when the main thoroughfare takes a sharp turn (like with the two intersecting streets) and you can't keep going . . . hit a dead end.

To avoid such a mess, best the route be surveyed and mapped out before trying to make a go of it.

Making with a left turn is a little easier because you'll be starting out and ending up on the right side of the street. But you'll still have to be sure the intersection's clear of other traffic and watch the transporters while you're easing 'em around the bend.




*Dear Half-Mast,*

*A long time ago we modified our M15 semi-trailers according to MWO ORD G160 W-1 (2 Mar 45) to make them M15A1's. But we still have to carry around the wheel skid guards.*

*We've hunted high and low for authority to get rid of these guards as excess items. Maybe I missed the point of the MWO and there's still some use for these wheel guards. Can you help me find a way to get rid of about 300 pounds of metal and at the same time make the M15A1 semi-trailer safer to work around?*

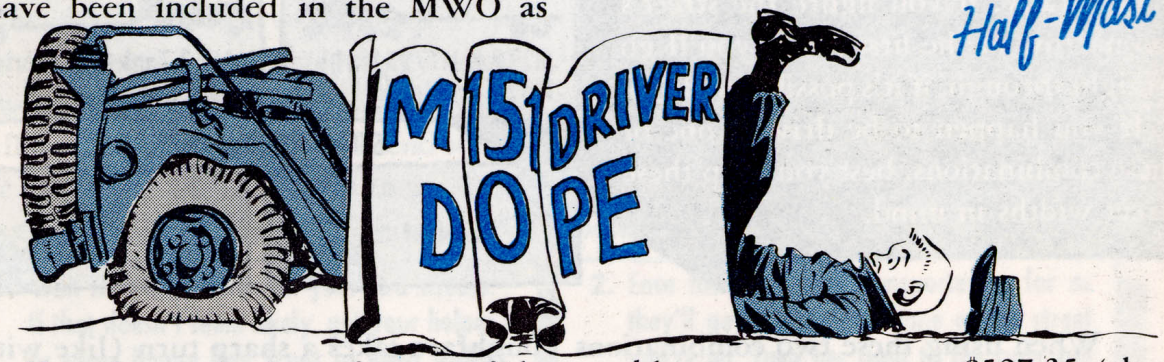
**CWO A. B. M.**

Dear Mr. A. B. M.,

When the MWO was applied there was no further use for the wheel skid guard assemblies (Manufacturer's Part Nos. FF-55141 to FF-55144), as you rightly figured out. These items should have been included in the MWO as parts "removed and discarded," but that MWO's now rescinded.

You can get rid of these wheel guards through AR 755-6 (May 60), "Disposal of Supplies and Equipment."

Half-Mast




If you're a wheelman for one of the new M151 ¼-tonners, listen good to this . . . wreckless drivers are not reckless . . . and the other way around, too.

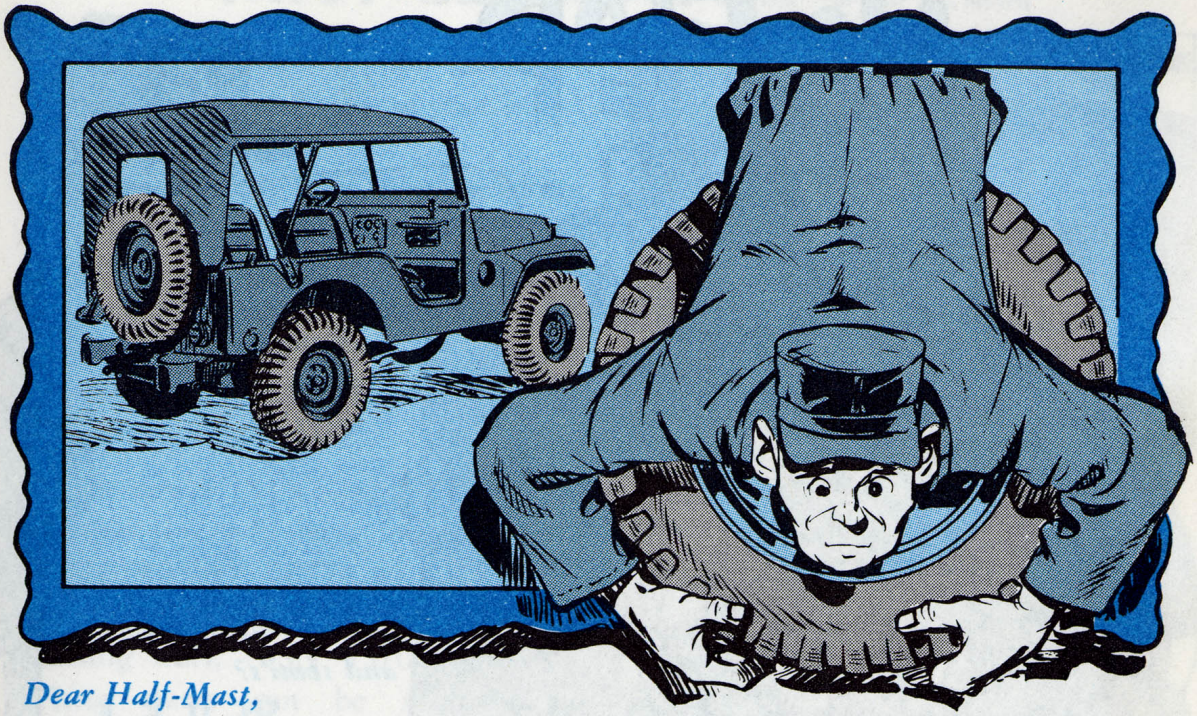
If you try fancy, high speed turns you're likely to turn—all the way over. That can mean plenty of body and frame damage . . . both yours and the M151's.

The medics will put you back in shape for free—if they can. But the mechanics won't be so generous. Your recklessness can cost you $527.35 (the price of the body and frame for your M151) and that ain't hay when it comes out of your pay.

Even if you're lucky and smash nothing but the windshield frame, that will still come to $58.69.

So, if you want to play cowboy, get yourself a pony, not an M151—it'll be easier on your hide, your pride, your ride . . . and your pocketbook.

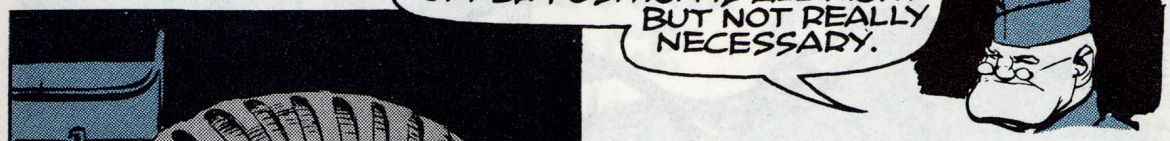
# VALVE POSITION

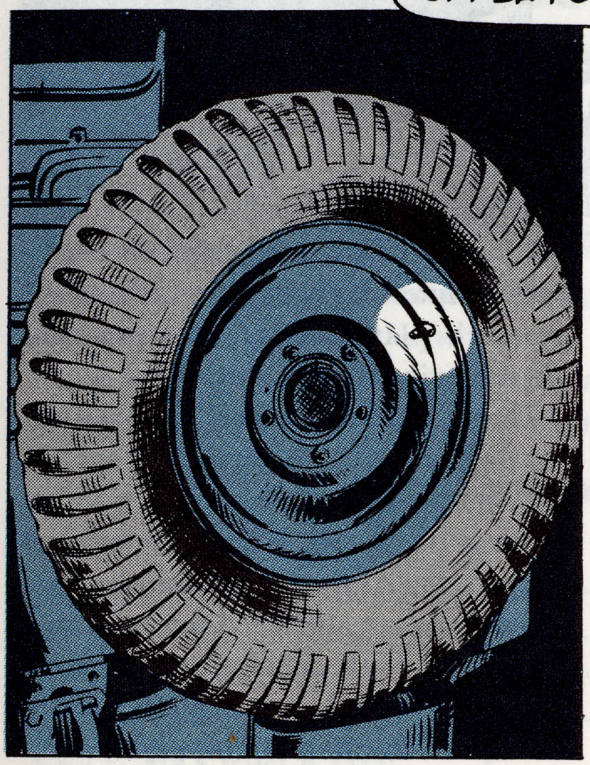


*Dear Half-Mast,*

*Mounting spare tires . . . don't you think they should be mounted with the valve stem between 10 and 2 o'clock, so water can't get inside and rust the rim and damage the tube?*

SSgt R. J. M.



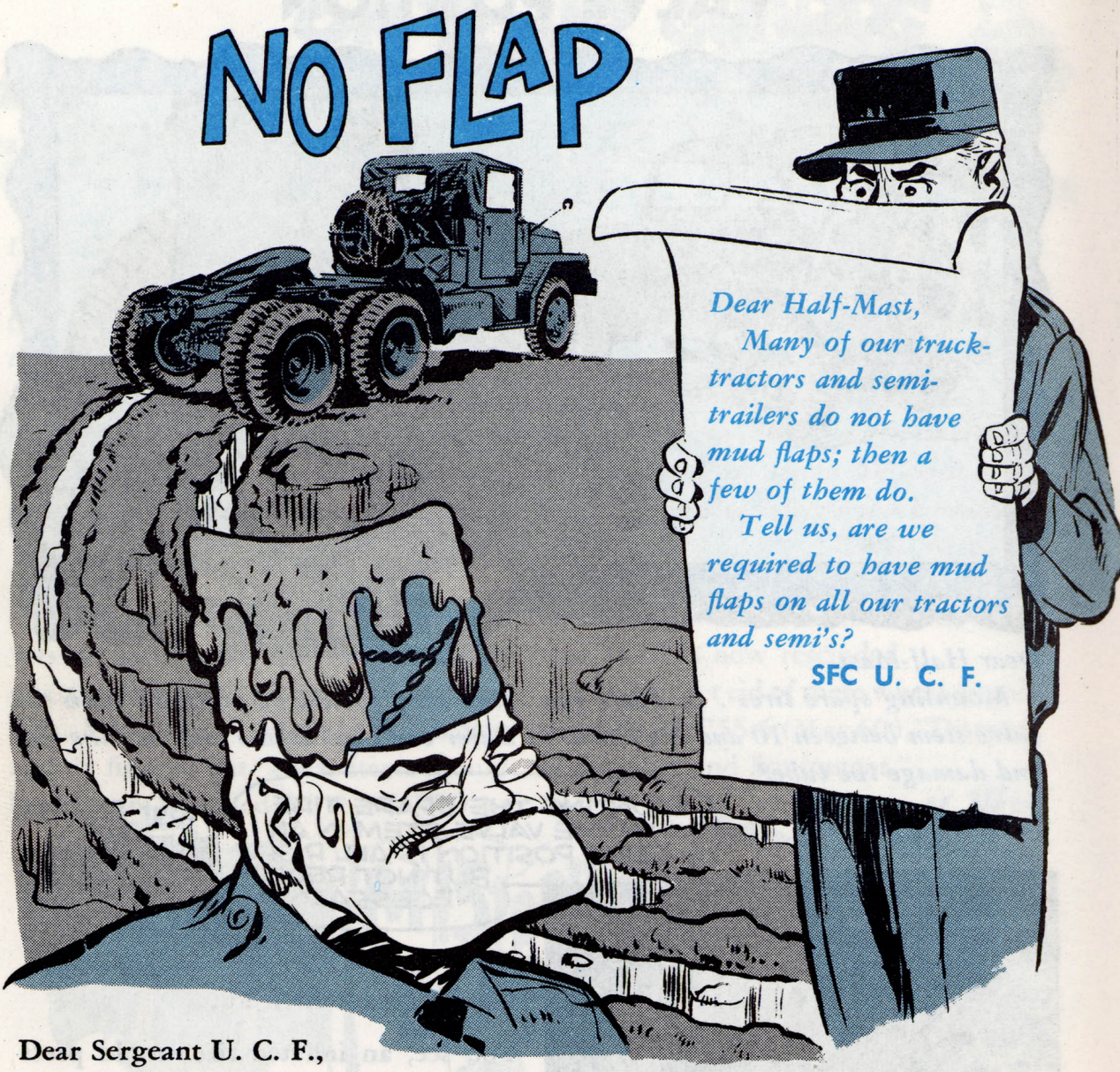
Dear Sergeant R. J. M.,

You see, an inflated tire would press the tube and flap around the stem opening and seal it.

If you're short on valve-stem caps, then mounting the spare with the stem on top would do some good. The upper position would help keep dirt and water out of the valve's interior.

TM 9-1870-1 gives all the ins-and-outs on pneumatic tires; para 25, covers the valve positioning and it only says that the spare tire should be mounted so the valve can be reached for checking and inflating.

Half-Mast




Dear Sergeant U. C. F.,

No . . . there's no over-all directive requirement for mud flaps on tactical type truck-tractors and semi-trailers.

Here's the general reasoning on mud flaps: Most tactical vehicles operate off the highway as much, or more than, on the highway. And when truck-tractors and semi-trailers operate off the highway in brush, deep mud, snow and rough terrain their flaps get torn off.

In many cases the flaps interfere when making sharp turns, especially with trailers that have landing legs; and in some cases mud flaps on truck-tractors interfere with the fifth wheel approach plate and are not practical when towing flat bed trailers.

The truck-tractors and semi-trailers that do have the flaps are usually special deals intended for extended periods of highway travel. These deals are worked out with the Army or area commander. When flaps are approved for local use, then it's up to the local area to support them because replacement parts are not usually in the normal supply system.



Half-Mast

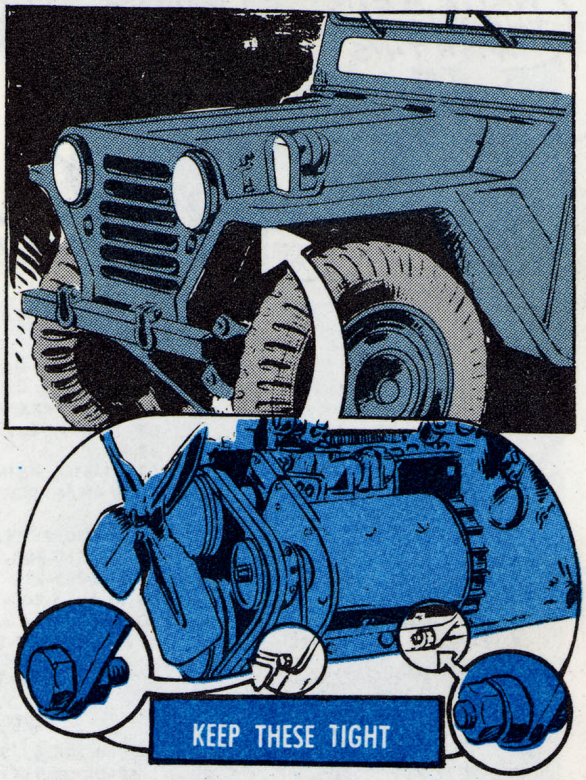
# M151 GENERATOR JOKER

Having trouble with the generator mounting bolts and nuts on your M151 ¼-ton truck?

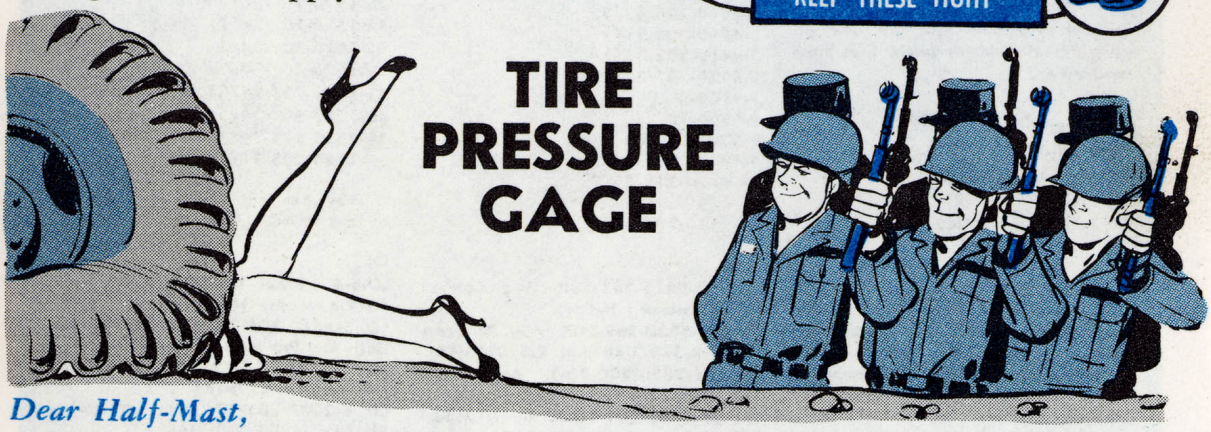
Some of them have been working loose. This lets the generator fall out of the mounting bracket which can beat up your engine something fierce.

So a word to the wise . . . check your generator mounting hardware and be sure everything's tight.

The new M151's coming off the production line will have longer screws, (FSN 5305-607-6877) with flat washers, (FSN 5310-984-1259) and self-locking nuts, (FSN 5310-275-2089). These parts can be requisitioned through normal supply channels.




# TIRE PRESSURE GAGE



*Dear Half-Mast,*

*We're trying to find out how many tire pressure gages FSN 4910-204-3170 our unit is supposed to have.*

*Do you know if there's a publication that spells out how many gages should be assigned to an outfit with various types of wheeled vehicles?*

**Capt E. L. M.**

Dear Captain E. L. M.,

You'll find the answer in the SM for the No. 1 Common tool kit. SM 9-4-4910-A88 dated Feb 63, has a Change 1 (19 Jun 63) that gives you the answer. Here's what it says:

"Issue of additional gages is authorized at the ratio of one per group of eight wheeled vehicles, including trailers, and/or fractional quantities thereof, as authorized by the applicable table of organization and equipment."

Half-Mast

## MORE "TRAFFIC LIGHT" PUBS (ESC)

*Here's an additional list of Equipment Serviceability Criteria TB's and TM changes. For the previous listing, see PS 131, pages 10 and 11.*

### TECHNICAL MANUALS

C1 5-3068A, Tractor, CAT D7.
C2 5-4310-215-15, Compressor, 15 CFM.
C3 5-4610-204-12, Water Purif Unit.
C1 9-2320-211-10, Truck, 5 ton, 6x6.
C3 9-7418, Personnel Carrier M75.
C2 10-4930-204-10, Tank, Pump Unit.
C8 11-283, Radios AN/VRC-6, 6X, 6Y.
C6 11-295, Radio Receiver AN/GRR-5.
C6 11-297, Radio Set. AN/VRC-19, 19X, 19Y, 19Z, 19XX, 19YY.
C4 11-611, Radios AN/VRC-16, 17, 18.
C8 11-614, Radio AN/GRC-10, Terminal AN/GRC-39, Repeater AN/GRC-40.
C3 11-900, PU PE75.
C1 11-1510-203-20, U-6A Aircraft.
C5 11-5805-211-15, AN/MTC-7.
C6 11-5815-200-10, TT Sets, AN/FGC 20, 20X, 21, 64 and 66; AN/VGC-4.
C4 11-5825-202-12, Beacon AN/GRN-6.
C2 11-6115-211-12, Gen GED PU-465/G.

### TECHNICAL BULLETINS

9-2320-206-10/5, M125 10 ton Truck.
11-287/1, AN/VRC-1 Mtd in M59.
11-1510-204-20/1, Config for OV-1A, OV-1B, OV-1C Aircraft.
11-1510-205-20/1, Config for U-1A Aircraft.
11-1520-209-20/1, Config for CH-47A Helicopter.
11-5840-211-12/1, Radar AN/PPS-4.

## FEWER URGENT MWO'S

*The list of Urgent MWO's on page 62 of PS 131 is getting slimmer. Here are the only ones that are now urgent according to the latest dope from Washington:*

| TCTM NUMBER | MWO NUMBER |
|---|---|
| TM 1-1H-37-1007. | 3-1040-206-45/3. |
| TM 1-1H-37A-1034. | 5-4210-202-35/1. |
| TM 1-2R-R1300-502. | 5-4610-202-35/1. |
| TM 1-1L-19(T)D-1002. | 5-8120-201-35/1. |
| | 5-9100-2. |
| | 5-9950-1. |
| | 9-2300-217-30. |
| | 9-4935-251-30/2. |
| | 11-6720-219-45/1. |
| | 11-6720-220-13/1. |
| | 55-1510-204-20/2. |
| | 55-1510-204-34/9. |
| | 55-1510-204-34/43. |
| | 55-1510-206-34/2. |
| | 55-1510-206-34/3. |
| | 55-1520-207-34/34. |
| | 55-1520-207-34/35. |
| | 55-1520-207-34/52. |
| | 55-1520-208-34/19. |
| | 55-1520-208-34/21. |

These are the MWO's that have got to be applied.

*A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins. For complete details see DA Pam 310-4 with latest changes.*

### TECHNICAL MANUALS

TM 5-3431-202-20P, Jul Welding Machine Arc.
TM 5-3431-208-25P, Jul Welding Set Arc Linde SWN-9-A.
TM 5-6115-275-12, Aug Gen Set, 10 KW, Mil Std SF-10-MD.
TM 5-6115-283-20P, Jul Gen Set Cat Mod D-397.
TM 5-6125-208-10, Aug Gen Power Sup, Hollingsworth Mod JHMX60E.
TM 5-6125-208-20, Jul Motor Gen, Hollingsworth JHMX60E.
TM 9-1400-250-12, Jul Ajax, Hercules, (Imp).
TM 9-1410-302-12P/2, Aug Sergeant.
TM 9-1430-511-12P/1, Sep Hawk, Ground Con Equip.
TM 9-1440-301-12P/2, Aug Sergeant, Spt & Svc Equip.
TM 9-2350-224-10, Jul M48A3 Tank.
TM 10-1670-225-23P, Aug Parachute.
TM 10-8415-201-23P, Aug Combat Veh Crewman's Helmet.
TM 11-5820-369-20P, Aug Receivers Radio R-520/URR and R-520A/URR.
TM 55-2320-200-20-1, Aug Truck, Van, Shop, 2½ Ton, 6x6, M220.
TM 55-2320-209-10-3, Jul Transport Guid Truck, Tractor, 2½ Ton, 6x6, M275.
TM 55-2320-209-10-4, Aug Wrecker Truck, 2½ Ton, M60w/WN.
TM 55-2320-209-10-5, Aug Dump Truck, M59, 2½ Ton.
TM 55-2320-209-10-6, Aug XM472 Van, 2½ Ton, 6x6.
TM 55-2320-210-10-1, Aug M222 Water Tank Truck, 2½ Ton, 1000 Gal.
TM 55-2330-207-10-2, Aug M129A1 and M129A1C Supply Van, 12 Ton.

### TECHNICAL BULLETINS

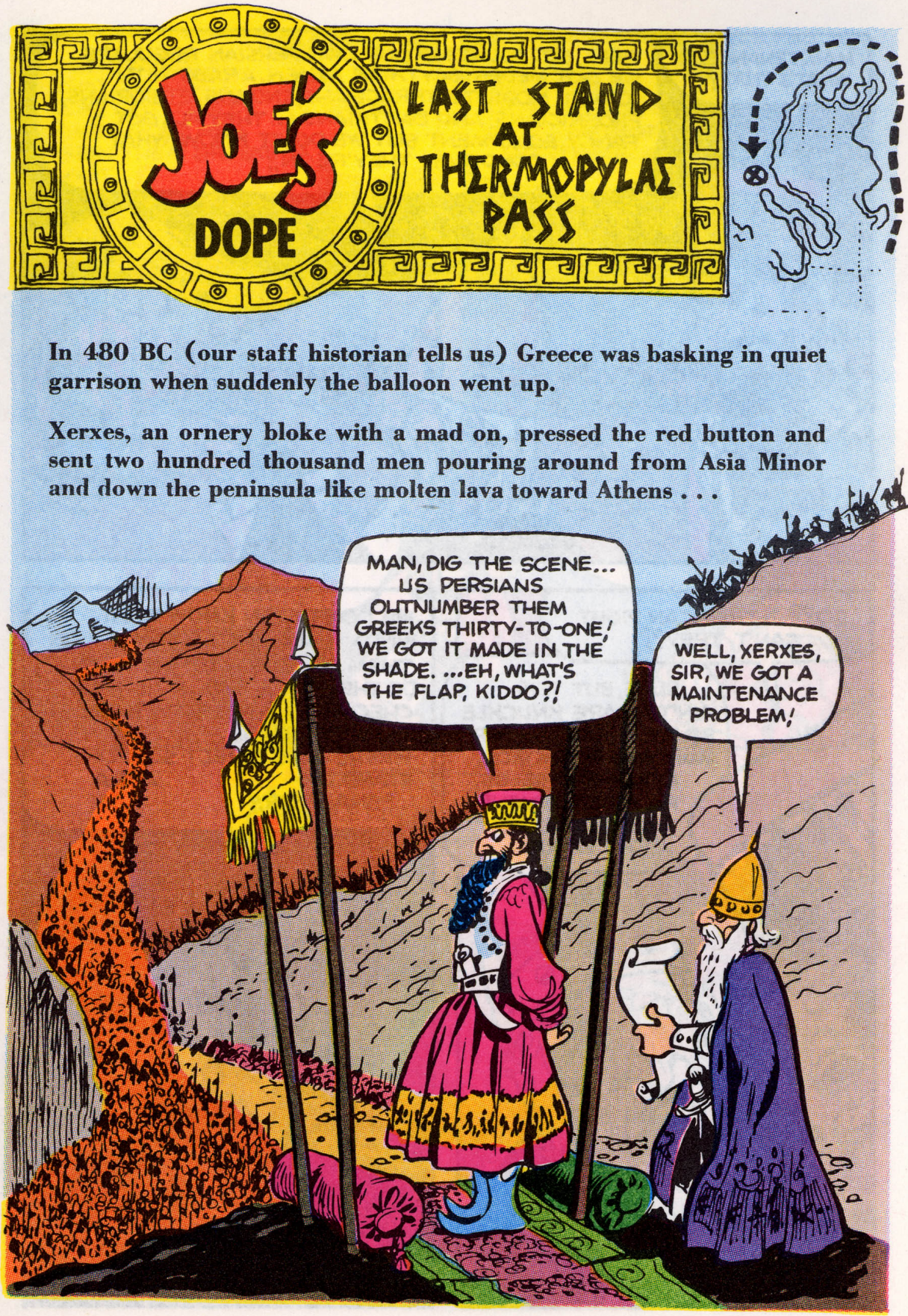
TB 3-6665-210-15/1, Aug Alarm, VG-Agent, E41R3.
TB CML 63, Aug Radioactive Tests Sample, M7.
TB ORD 651, Aug Use of Antifreeze.

### LUBRICATION ORDERS

LO 5-3431-205-15, Aug Welding Machine, Arc, Libby Model LE 300.
LO 5-4310-227-15, Jul Air Compressor, 15CFM, Mods: OEG-458-ENG-1.
LO 5-4610-205-20, Aug Water Purif Unit: Met-Pro Mod 3000-2700A.
LO 9-2320-213-12, Jul M274 and M274A1 Truck, ½-Ton.
LO 9-2330-205-12, Jun Gen Trailer, 2½-Ton, M200, M200A1.
LO 9-2350-201-12, Jul Tank, M41, M41A1, M41A2, M41A3.
LO 9-2350-203-12, Jul Howitzer, 155-MM, M44 and M44A1.
LO 9-2350-205-12, Aug M48 Tank.
LO 9-2350-210-12, Jul Howitzer, 8-In M55.
LO 9-2350-213-12, Jun Gun, M56 Antitank, SP: 90-MM.
LO 9-2350-224-12, Aug M48A3 Tank.

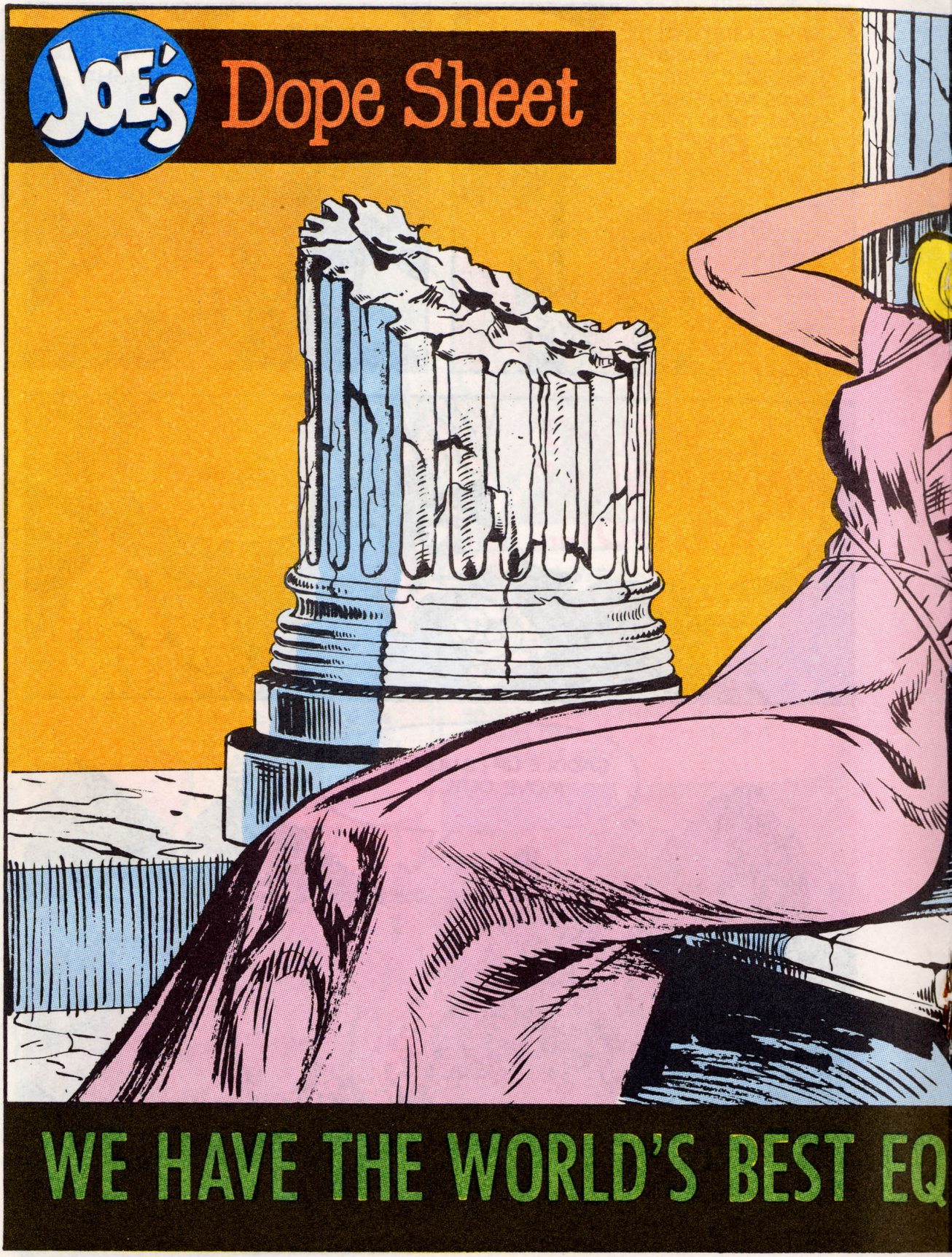
### MISCELLANEOUS

AR 750-1500-2, Jul Tech Pubs-A/C Files.
MWO 9-1005-245-20/1, Aug Gun Mount, M142 (M60 Machine Gun).
MWO 9-2300-255-20, Aug Instal of Directional Signal Lights.
MWO 9-2300-263-20, Aug Trucks and Truck Tractors Instal of Directional Lights.
MWO 9-2320-218-20/11, Aug Truck ¼ Ton, M151.

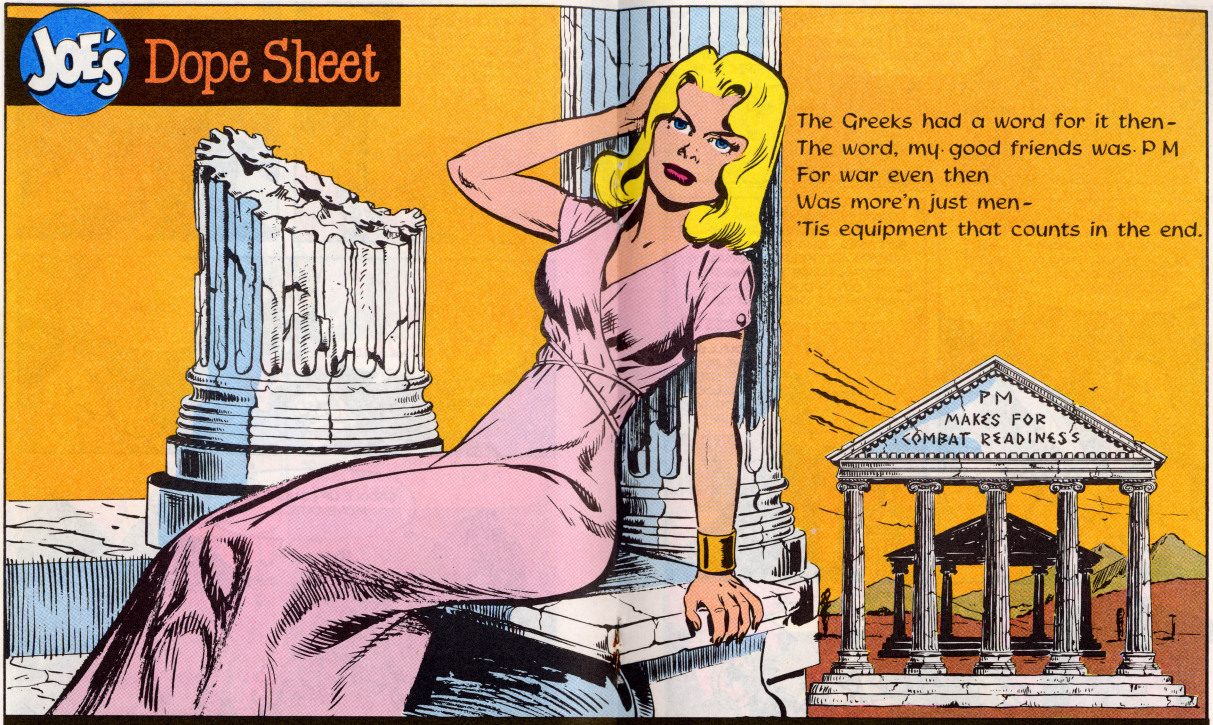

JOE'S DOPE
LAST STAND AT THERMOPYLAE PASS
In 480 BC (our staff historian tells us) Greece was basking in quiet garrison when suddenly the balloon went up.
Xerxes, an ornery bloke with a mad on, pressed the red button and sent two hundred thousand men pouring around from Asia Minor and down the peninsula like molten lava toward Athens . . .
MAN, DIG THE SCENE... US PERSIANS OUTNUMBER THEM GREEKS THIRTY-TO-ONE! WE GOT IT MADE IN THE SHADE. ...EH, WHAT'S THE FLAP, KIDDO?!
WELL, XERXES, SIR, WE GOT A MAINTENANCE PROBLEM!

MAINTENANCE! WHAT'S THAT?
WELL, NOT COUNTING OUR OWN PERSIAN REGULARS WE GOT MEDES, SCYTHIAN AXMEN, ARABS WITH CAMEL MOBILITY, THRACEIANS, INDIANS, ETHIOPIANS, PHOENICIANS, AND BACTRIANS.... THEY ALL GOT FANCY EQUIPMENT BUT WE DON'T KNOW WHAT CONDITION THEY'RE IN!!
SO?? ... THEY CAN FIGHT CAN'T THEY??
SURE, BUT THIS AIN'T A BARE KNUCKLE BRAWL. THIS IS MODERN WARFARE — SWORDS, ARROWS, SHIELDS, FLAME THROWIN' CATAPAULTS!! THE WORKS.
WE DON'T EVEN KNOW WHAT KINDA MILEAGE CO. E CAN GET ON THEM CAMELS.... F'R INSTANCE DO THEY GET A THOUSAND MILE CHECK-UP.... HAVE THEY BEEN FILIN' ACCURATE EIR'S OR WHERE DOES DIRECT SUPPORT STAND ON MWO'S! IT'S A "SNAF," SIR!!

and the biggest invasion in history (up to that time) was rolling.



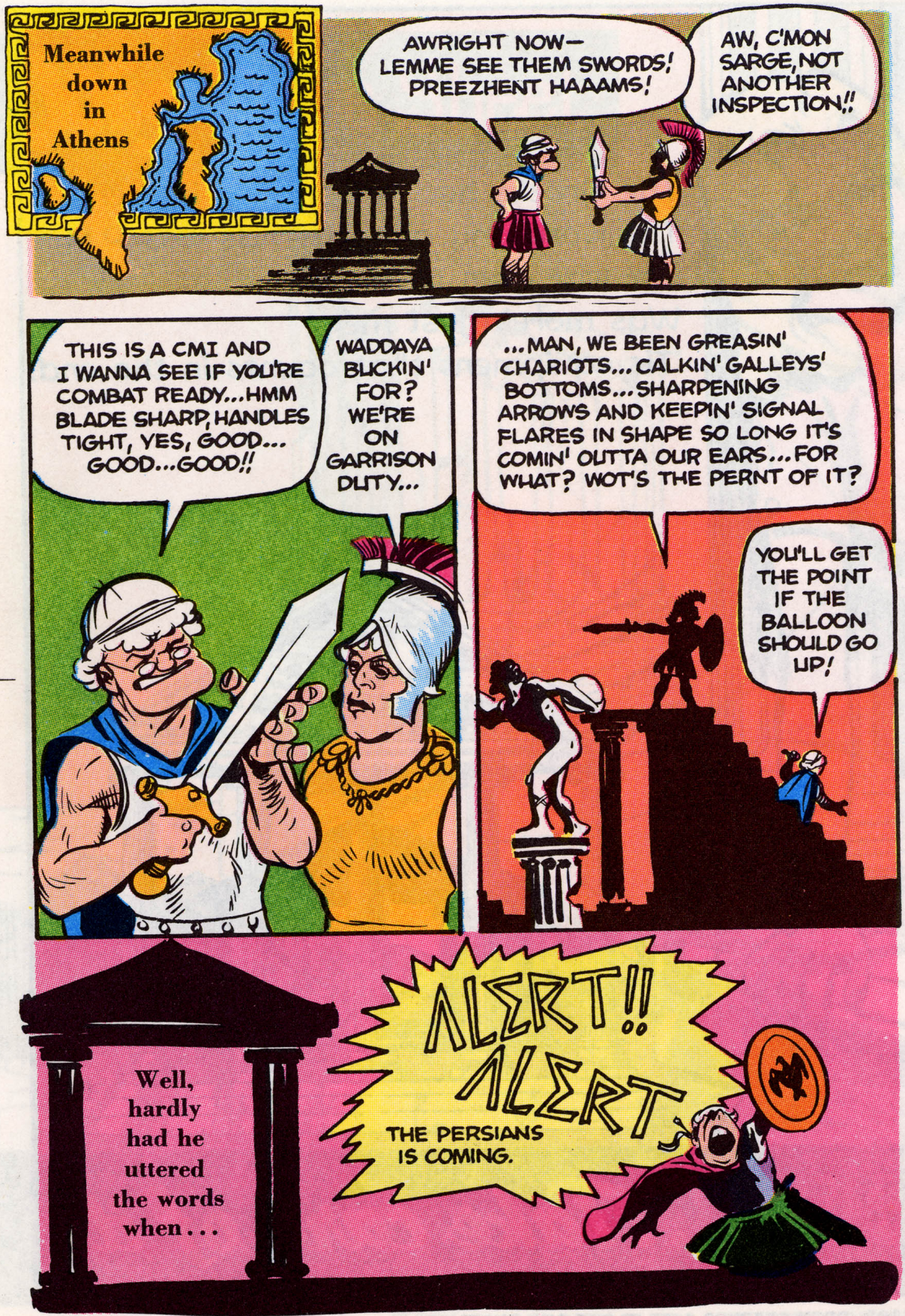

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULL




IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

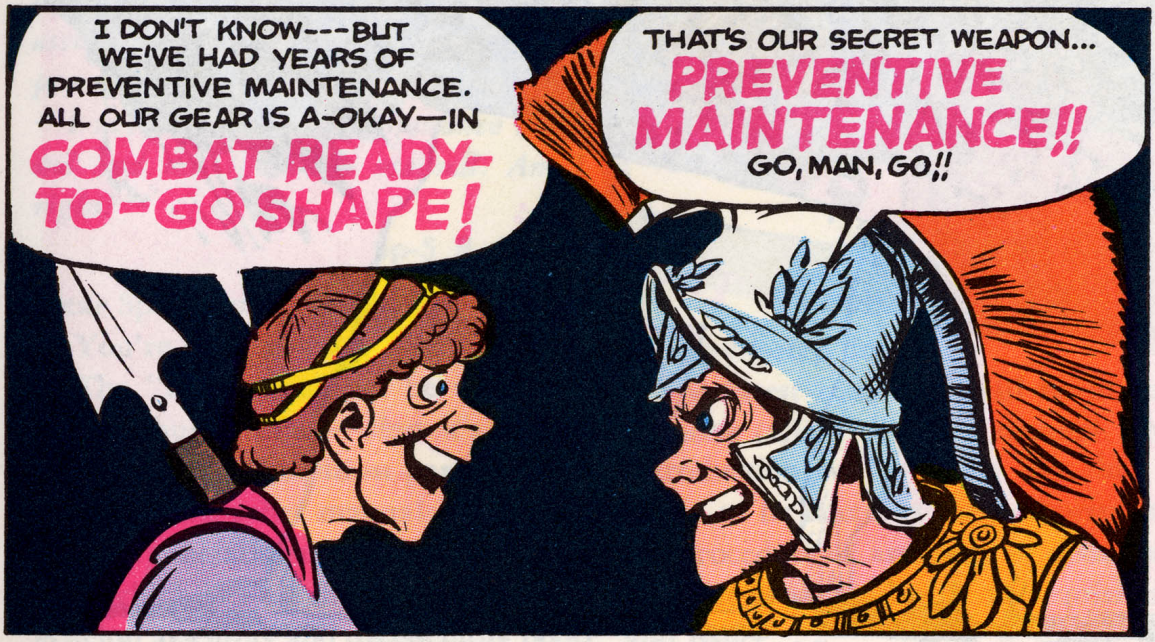
# UIPMENT...Take care of it

ETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

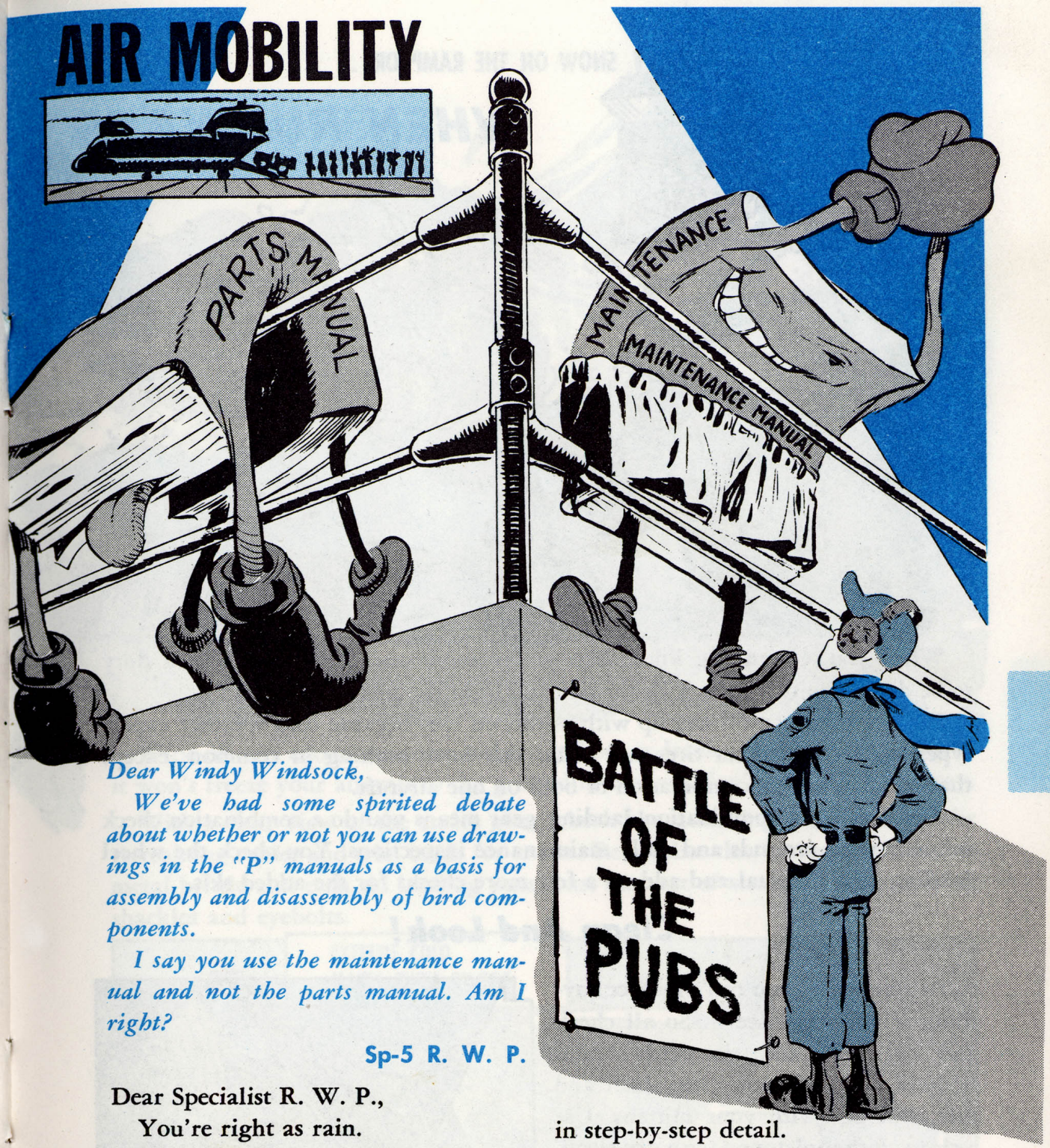

Meanwhile down in Athens
AWRIGHT NOW— LEMME SEE THEM SWORDS! PREEZHENT HAAAMS!
AW, C'MON SARGE, NOT ANOTHER INSPECTION!!
THIS IS A CMI AND I WANNA SEE IF YOU'RE COMBAT READY... HMM BLADE SHARP, HANDLES TIGHT, YES, GOOD... GOOD... GOOD!!
WADDAYA BLICKIN' FOR? WE'RE ON GARRISON DUTY...
...MAN, WE BEEN GREASIN' CHARIOTS... CALKIN' GALLEYS' BOTTOMS... SHARPENING ARROWS AND KEEPIN' SIGNAL FLARES IN SHAPE SO LONG IT'S COMIN' OUTTA OUR EARS... FOR WHAT? WOT'S THE PERNT OF IT?
YOU'LL GET THE POINT IF THE BALLOON SHOULD GO UP!
Well, hardly had he uttered the words when . . .
ALERT!! ALERT
THE PERSIANS IS COMING.

WHAT'S NEW FROM G-2?
OH, GENERAL LEONIDAS— THEM PERSIANS OUTNUMBER US 30-TO-1.
AHA, THEY ADVANCE ALONG THE COAST.
READY THE SHIPS FOR AN EVACUATION.

HMM...WAIT...IF WE CAN HOLD 'EM AT THERMOPYLAE PASS FOR JUST SIX DAYS IT'LL GIVE US THE TIME WE NEED TO DEPLOY OUR TROOPS, SEND OUT OUR SHIPS AND LICK THE BEARDS OFF 'EM.
WE ONLY GOT 300 SPARTANS TO SPARE...IF WE ONLY HAD A SECRET WEAPON!
HMM... WONDER HOW THEIR EQUIPMENT SHAPES UP?


I DON'T KNOW---BUT WE'VE HAD YEARS OF PREVENTIVE MAINTENANCE. ALL OUR GEAR IS A-OKAY—IN COMBAT READY-TO-GO SHAPE!
THAT'S OUR SECRET WEAPON... PREVENTIVE MAINTENANCE!! GO, MAN, GO!!

Well, the 300 Greeks did it, they held 'em at the pass . . . by the time they finally got overrun their buddies were ready and kicked the daylights outta them Persians.




*Dear Windy Windsock,*

*We've had some spirited debate about whether or not you can use drawings in the "P" manuals as a basis for assembly and disassembly of bird components.*

*I say you use the maintenance manual and not the parts manual. Am I right?*

**Sp-5 R. W. P.**

Dear Specialist R. W. P.,

You're right as rain.

The "P" manual can be used as a guide—but that's all—since it's only an **authority to requisition** parts. It supplements the other manuals, including your organizational maintenance manual, which has all the first and second echelon assembly and disassembly poop in step-by-step detail.

The latest convincer will be in the Chinook (CH-47A) parts manual. The introduction will actually say that it is not to be taken as the authority for the procedure of assembly or disassembly, but as the authority to requisition and issue.

Windy

SNOW ON THE RAMP OR...

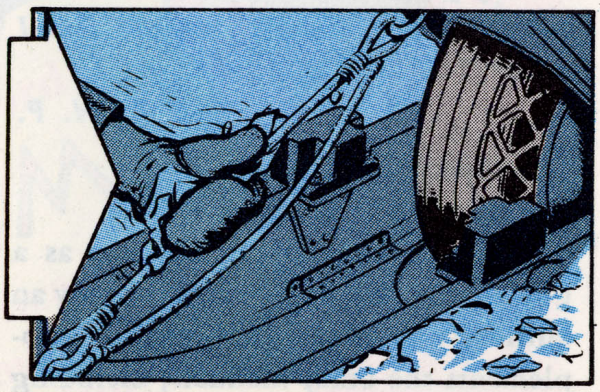
# WHEN RUNWAYS

When you're standing knee deep in the snow and there's some bird duty to be done, you can't just kick the tire and light the fire.

For one thing, you'll end up with a stubbed toe. Because cold weather expert types agree that rubber tires and metal skis have nothing in common, except that you can have a combination of both on one aircraft.

And having a combination landing gear means you do a combination check on your walk-arounds and daily maintenance inspections. You check the wheel landing gear as usual and add on a few more checks for the added skis.

## Clean And Look!



To start with, you can't inspect anything if you can't see it. So all check and stay cables and trim cords should be kept clear of snow, ice, slush and dirt. But not with your mittens. Use a clean cloth **moistened** with dry cleaning solvent. If you saturate the cloth you run the risk of the fluid thickening up or freezing before it can evaporate.

Apply heat from some suitable source like the heat gun or your Herman Nelson to get rid of ice that could interfere with operation of the restraining gear and the retraction linkage.

SNOW ON THE RAMP OR...

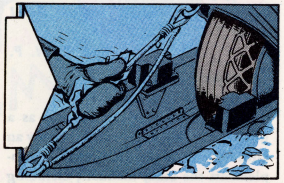
# WHEN RUNWAYS TURN WHITE

When you're standing knee deep in the snow and there's some bird duty to be done, you can't just kick the tire and light the fire.

For one thing, you'll end up with a stubbed toe. Because cold weather expert types agree that rubber tires and metal skis have nothing in common, except that you can have a combination of both on one aircraft.

And having a combination landing gear means you do a combination check on your walk-arounds and daily maintenance inspections. You check the wheel landing gear as usual and add on a few more checks for the added skis.

## Clean And Look!



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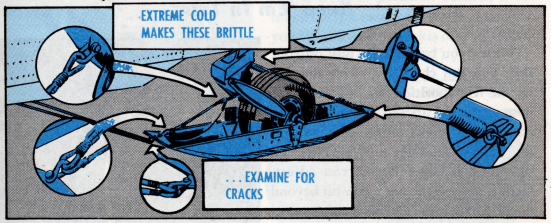
Apply heat from some suitable source like the heat gun or your Herman Nelson to get rid of ice that could interfere with operation of the restraining gear and the retraction linkage.



Wipe off any excess moisture to keep it from re-freezing on surfaces. Also, so it won't freeze your aircraft to the ground in case you don't take off right away.

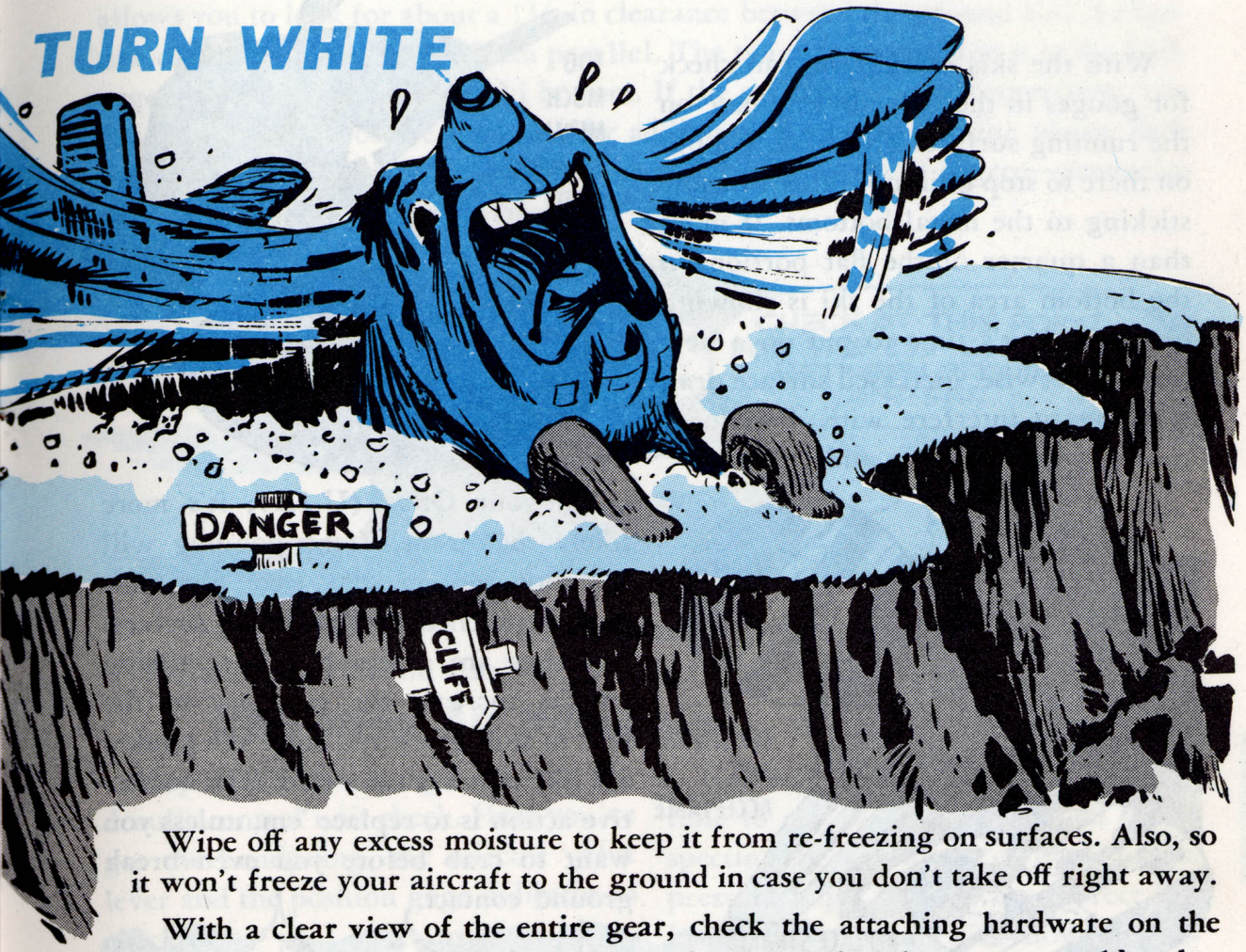
With a clear view of the entire gear, check the attaching hardware on the restraining cables and trim cords for cracks. Remember that extreme cold makes metal brittle and each ski landing puts some amount of strain on the attaching shackles and eyebolts.




The skis should always be retracted for ground inspections, leaving the restraining gear slack and some flex in the bungee-type trim cords.



MORE

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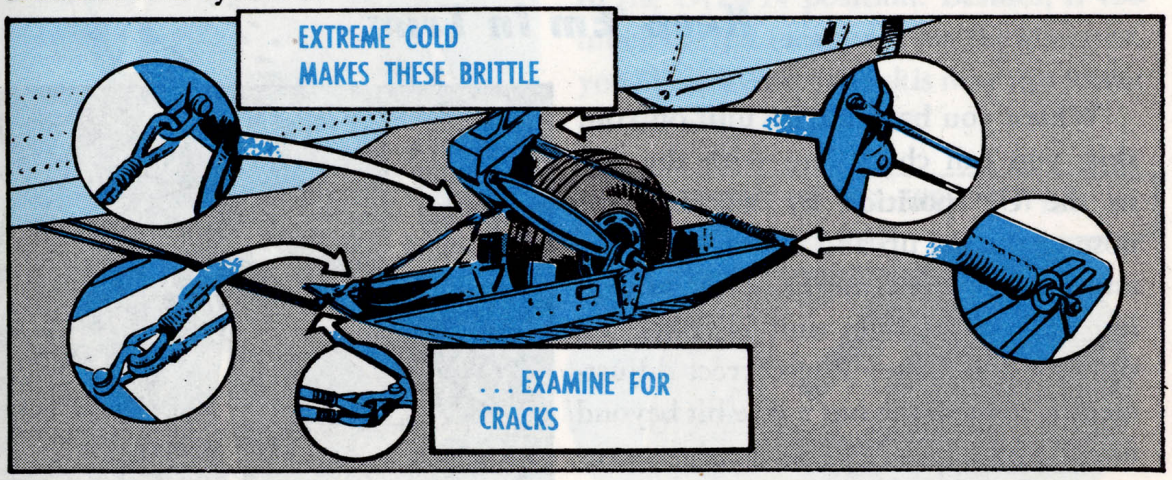


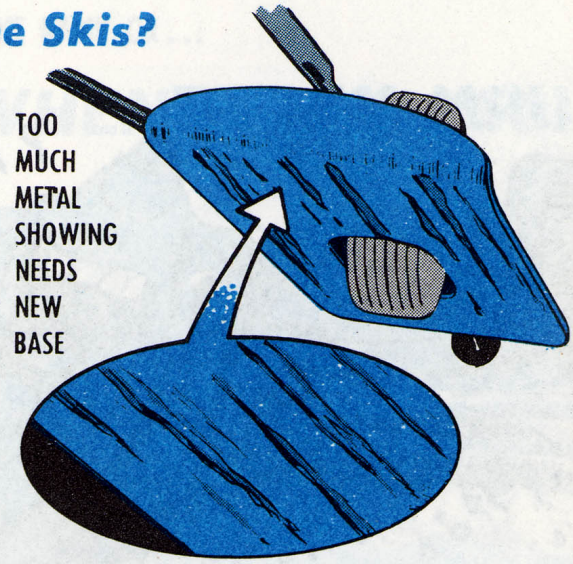

The skis should always be retracted for ground inspections, leaving the restraining gear slack and some flex in the bungee-type trim cords.



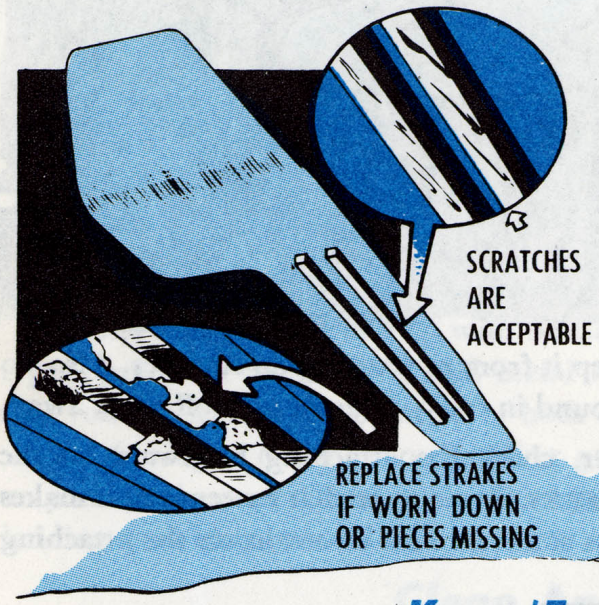
PS MORE

## How're The Skis?

With the skis raised, you can check for gouges in the polyethylene base on the running surface. This base was put on there to stop buildups of ice or snow sticking to the metal bottoms. If more than a quarter of the flat portion on the bottom area of the ski is showing bare metal, it's time to put on a new base. Otherwise, increased surface drag is going to interfere with directional control on ski takeoffs and landings.

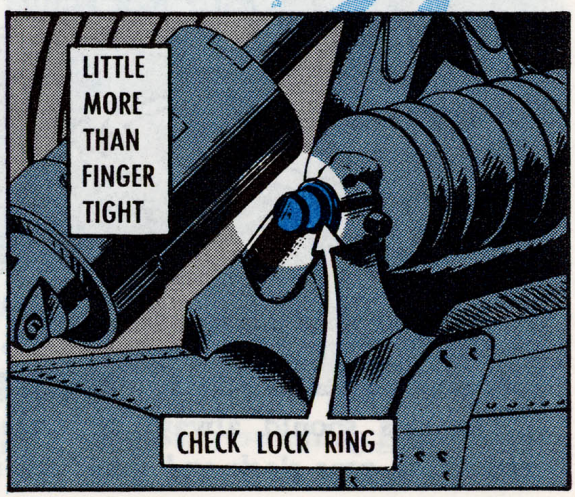



On your Otter (U-1A), it's more likely that most of the gouging will be showing on the two fiberglass strakes attached to the running surface. Scratches are acceptable, but missing chunks increase the tendency of the skis to skid sideways, since the strakes act like runners on a sled. The corrective action is to replace 'em, unless you want to crab before you even break ground contact.

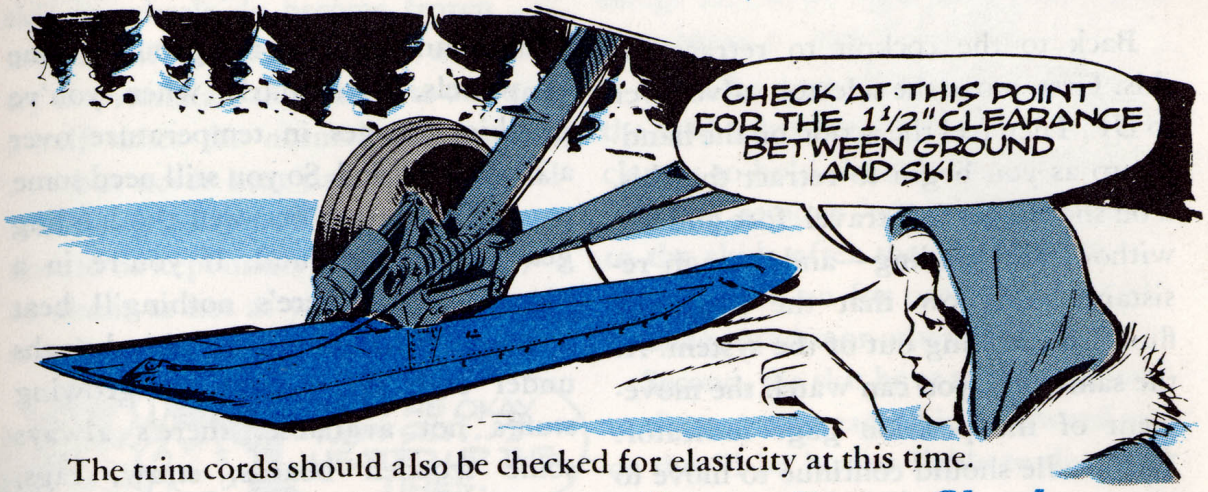



## Keep 'Em In Trim

Where you have a trim unit on your skis, you can check 'em with the skis in the UP position by working the nose of the ski up and down. If there's any slack or play, might be the adjusting nut on the trim unit is either too tight or too loose. The correct adjustment is to have the nut a wee bit beyond finger tight. And while you're at it, see if the adjusting nut's lock ring is in place and without cracks.



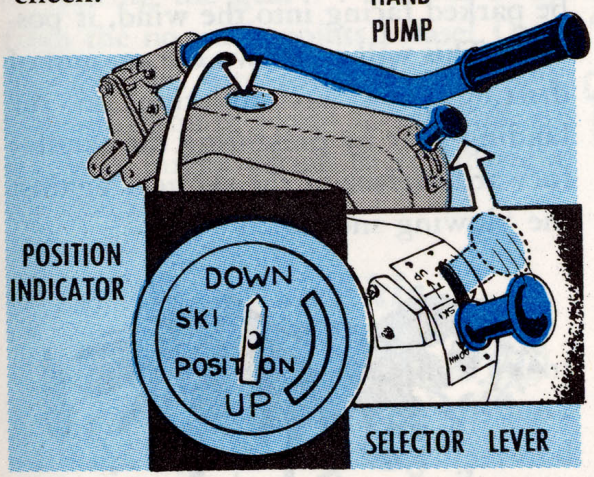
The aircraft should be parked on a level surface for the trim check. This allows you to look for about a 1½-in clearance between the ground and the bottom of the skis, with both of 'em parallel. The point to check from is at the back edge of the flat part of each ski bottom. If the ski attitude needs correcting, you change the length of the trim unit by adding or removing packing plates. Each packing plate you add will lower the nose of the ski by a half degree—removing one raises the nose the same amount.




The trim cords should also be checked for elasticity at this time.

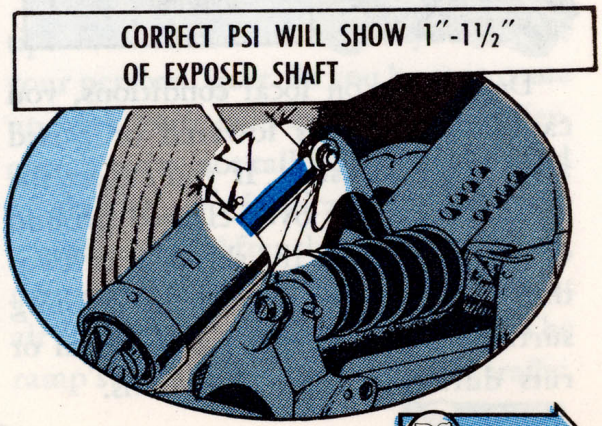
## Operation Air Hydraulic . . . Down Check

Hop inside the cockpit for the hydraulic control unit check. Here you've got the handpump, the selector valve lever and the position gage indicator to check.




First move the selector valve lever to the DOWN position to check the lever's spring action and to see if the needle on the position gage indicates that the skis are dropped.

**Got air pressure?** This is a good time to use the "look" method of inspecting the actuator. You don't need a pressure gage, because the correct PSI inside the actuator will show you between an inch to an inch and a half of exposed actuator shaft . . . with the skis in the DOWN position. Besides, if too much air has escaped from the actuator, you'll notice that the skis may not lower all the way to DOWN.



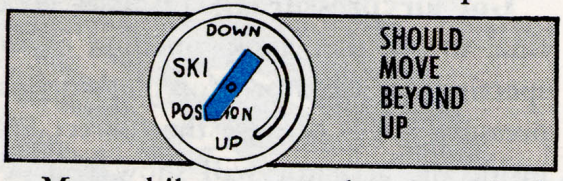



P.S. MORE

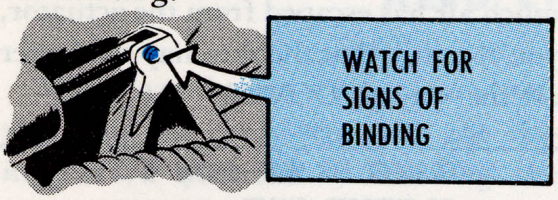
**Restraining gear taut?** This is also a good time to see if the check and stay cables are holding the skis rigid and parallel to the length of the fuselage. Too much lateral or vertical play could allow the skis to wander into a toe-in, toe-out or toe-down position in flight . . . a perfect setup for an accident waiting to happen. In fact, one happened just that way not long ago.

## Up Check

Back to the cockpit to retract the skis. First, move the selector valve lever to UP. Then feel the action on the hand-pump as you begin to retract the skis. You should get full travel, fore and aft, without any binding—and enough resistance to know that the hydraulic fluid isn't leaking out of the system. At the same time you can watch the movement of the position gage indicator. The needle should continue to move to just beyond the UP mark, and then hang there as the relief valve opens.




Meanwhile, you can have somebody outside watching the swivel action of the wheel axle-to-ski linkage for signs of binding.




Depending on local conditions, you can leave the skis lowered or raised after you're finished. If you expect the aircraft to move over cleared ground or hardpack, keep the skis at least two-thirds retracted to protect the running surfaces from exposed rocks, brush or ruts during ground operations.

## Watch How You Park

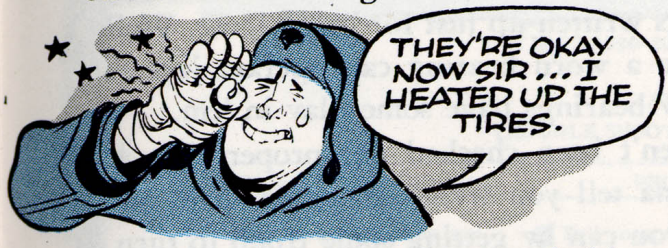
Skis can freeze to the ground, same as wheels, particularly when you've got big changes in temperature over a 24-hour period. So you still need some sort of insulation between the landing gear and the ground. If you're in a wooded area, there's nothing'll beat a couple-three layers of pine boughs under each ski. But if the growing stuff's not available, there's always some wooden boards, straw, rags, paper, or that material called "etc." around.

Whatever you use, be sure it's dry and clean on top when you put it down. Also, try to place the insulating material on the ground so the aircraft will be parked facing into the wind, if possible. This will cut down the amount of drifting snow accumulating on the landing gear by presenting the smaller forward surface of the ski gear against the blowing snow.

It goes without saying you don't want to park aircraft in any wet or

slushy areas and if you had to taxi your aircraft through any slop to get to the parking area, be sure you clean off the landing gear immediately after parking.

If the situation prevents you from insulating the landing gear, and the skis or wheels do become frozen . . . use heat. If no external heat's available, try to overinflate the wheels to one-and-a-half times the normal tire pressure . . . but never heat tires which are already overinflated. The amount of heat should be kept under 160° F (71° C)—or about as hot as your bare hand can stand without being burned.




When you can't make use of either heat or air pressure, you've got to fall back on the old tried and true method of rocking the gear . . . hands away from the no **push** points please! Once you get that bird loose, keep moving her until you're ready to take off, or the gear might decide to freeze right up again.

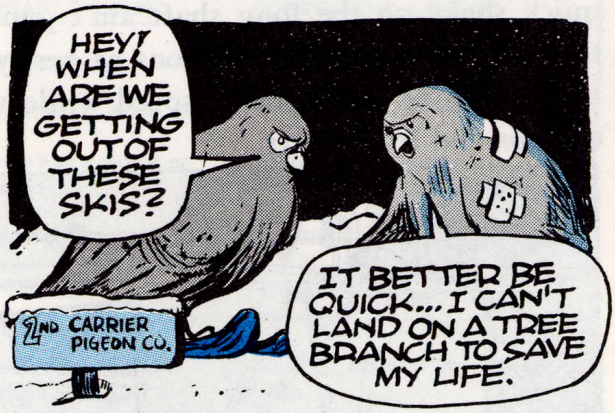
## Skids vs Skis

Ground manuevering on skids might have it over wheels, but skids still don't have the high flotation mobility you'd get with skis. For example, snow with a breakable crust or roots and rocks sitting just under the surface of the snow can cause you to up collective and down your bird in one quick action.

Some cold weather area units have found it handy to fix up their Sioux (OH-13) or Iroquois (UH-1) skids with a pair of homemade skis. It makes things easier in ground handling or taxiing. But if you feel this type of local fix is for you, remember two things before you go getting the CO's permission to install the skis.

First, be sure there's no drilling of the skid tubes involved. Use a series of clamps to hold the skis to the skids, so you can remove 'em without damage to the skids after the snow melts . . . or leave 'em on for use in thawed out muskeg, tundra or other goo.

Second, the skis have to be contoured to the curve on each skid's forward toe, or they'll be just as liable to dig in as the unprotected skids.



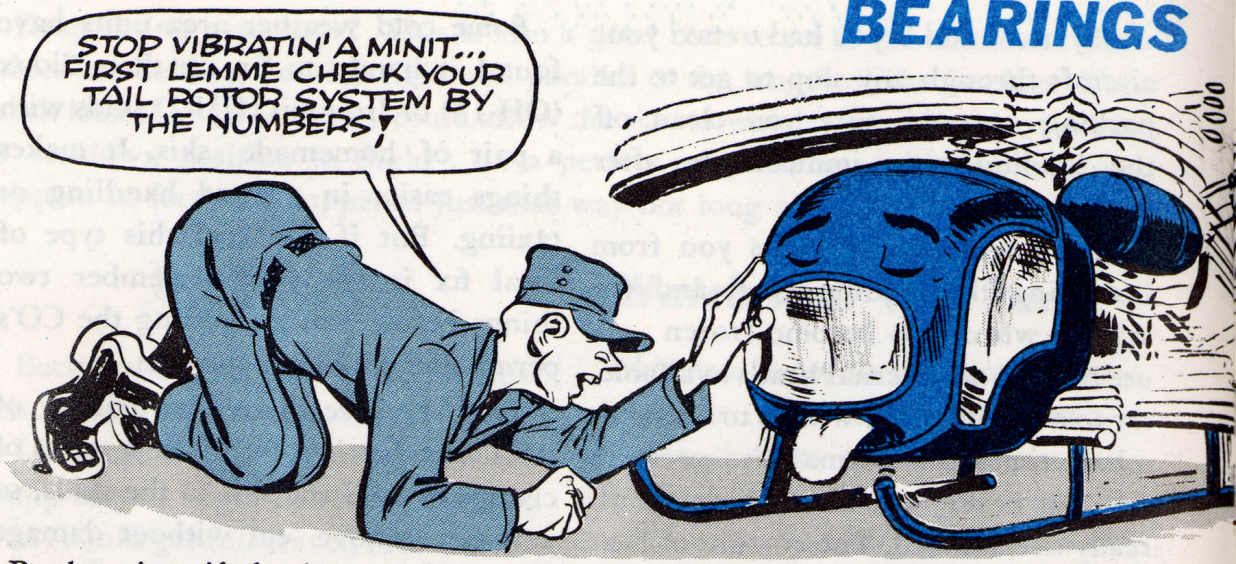

## Any Spare Tips?

You don't get any issue spare ski tips for aircraft slats like you do on your personal gear. So you have to come up with your own extras. Only difference is we're not talking about the kind of ski tips you fabricate, but the ones you think up. After they've been thunk, they go stale without use. So how 'bout air freighting 'em to the PS hangar. The ramp's been cleared for inbound traffic.



PS END

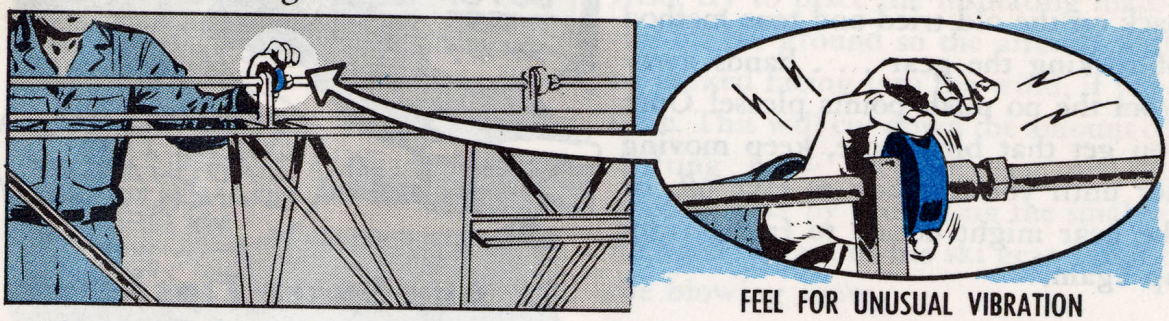
# BEARINGS




Replace 'em if they're rough . . . leave 'em be if they're loose! That's the story on your Sioux (OH-13) tail rotor drive shaft hanger bearings.

It's smooth operation that counts. But hear tell there've been a high number of needless replacements on bearings written up just for being loose. Well that won't hack the program . . . 'cause a worn bearing can operate just as smoothly as a new one. In fact, even new bearings have some play in 'em.

Trouble is some of these bearings haven't been checked out proper-like. A quick shake on the long shaft ain't gonna tell you what's doing. You've got to duplicate in-flight conditions as best you can by getting some troop to turn up the engine to operating speed while you feel for any movement with your thumbs and forefingers.

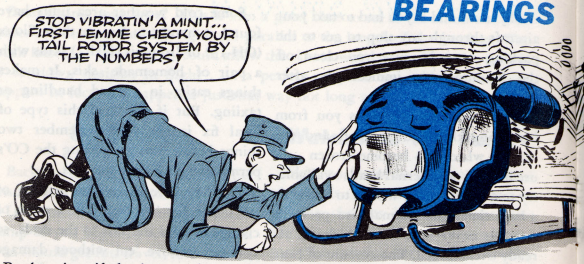


FEEL FOR UNUSUAL VIBRATION

If you get a smooth action throughout the entire 360-degree revolution it doesn't matter how loose the bearings are—they're OK. But a bearing that's not uniformly worn (due to brinelling or fretting) will tease you with a little extra movement or wobble every time you hit a rough spot on the bearing. That's the time to replace it.

From time to time you're liable to run into a bearing that wears out so evenly that your flying machine starts one of those high freq vibrations even though the bearing is still operating smoothly. Now that's what you call excessive play. But you're not replacing the bearing because of the excessive play, you're replacing it to stop the vibrations.

# BEARINGS GOTTA RUN SMOOTH

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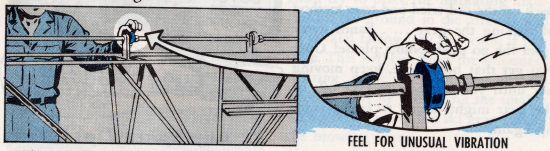

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## FLIGHT VIBRATION CHECKOUT

Not every high freq vibration is caused by a bad bearing. Jumping to that conclusion is gonna waste you a lot of maintenance time. So next time a Sioux driver flares up to your hangar ramp with an in-flight vibration write-up, check out that bird's tail rotor system by the numbers.

1. Blades tracked properly and no blade damage?
2. Pitch change links within wear limits?
3. T/R installation OK (hinge bolts) and without excessive play?
4. Blade grips holding OK?
5. U-joint within wear limits?
6. Drive shaft bearings operate smoothly?

If you haven't found the cause of that vibration by the time you get to the bearings, it's time to do a little talking with support about making the other checks for vibration called out in the tail rotor trouble shooting table of your TM 55-1520-204-20.

TM 55-1520-204-20 Chapter 2 Section VII

TABLE IV
TROUBLE SHOOTING - TAIL ROTOR

| INDICATION OF TROUBLE | PROBABLE CAUSE | CORRECTIVE ACTION |
|---|---|---|
| High frequency vibration | ● Tail rotor blades out of track | Track tail rotor blades |
| | □ Tail rotor blades out of balance | □ Balance tail rotor blades |
| | ● Worn or loose hinge mounting bolts and washers | Replace bolt bearings and washers |
| | ● Bent pitch change link | Replace pitch change links |
| | ● Loose grip bearing | Replace bearings or hub assembly |
| | □ Misalignment of drive shafts | □ Check alignment of drive shafts |
| | ● Excessive play in drive shaft bearings | Replace bearings |
| | □ Improper adjustment of spline coupling | □ Adjust end clearance of spline couplings |
| | □ Improper mounting of gears in tail rotor gear box or bad bearings | □ Replace tail rotor gear box |
| | ● Improper installation of universal joint | Check installation of universal joint |
| | ● Worn universal joint | Replace universal joint |

● = Organizational Maintenance Checks
□ = Support

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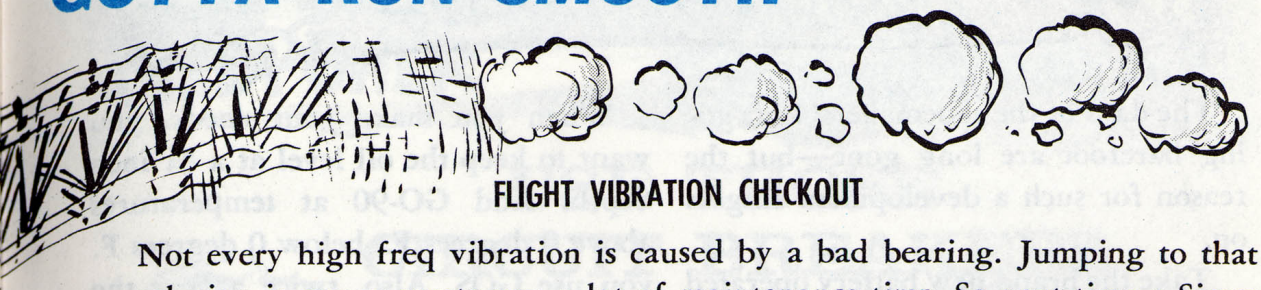

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● = Organizational Maintenance Checks
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The days of the shoemakers' kids going barefoot are long gone—but the reason for such a development lingers on.

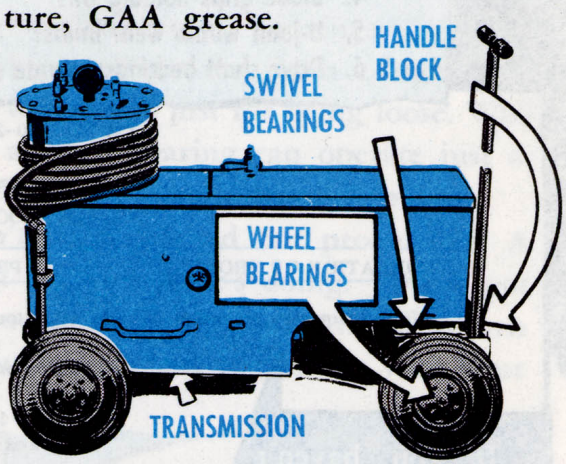
Take the brand new battery operated lubricating unit, FSN 4930-806-7970, listed in SM 55-4-5180-A08 (28 Nov 62) to replace the old unit in your aircraft organizational maintenance, A Supplemental, B, and C tool sets.

You can be so busy shootin' grease into other equipment that you clean forget the luber itself needs some of the same medicine to stay in the pink.

So, **every week** you want to check the oil level in the transmission. Latch on to a clean metal rod that measures about ¼ inch in diameter and 8 inches in length for use as a dipstick . . . and you'll have to take out the battery charger to get at the filler pipe.

When you make your check, you want to keep the oil level at a ¾ inch depth. Add GO-90 at temperatures above 0 degrees F., below 0 degrees F. you use GOS. Also, twice a year the transmission gets drained and refilled with two-thirds of a quart.

The only other lube service the lubricator needs is a monthly greasing of the handle block, swivel bearing, and the wheel bearings with all-temperature, GAA grease.




# IT'S IN THE CARDS

*Dear Windy Windsock,*

*I have tried to get the AF TO Form 76 compass correction cards through the Army publications channels. But all our requisitions come back as "can't identify this form." Does the Army have a number for this card and where can I find it?*

**SSgt G. S. H.**

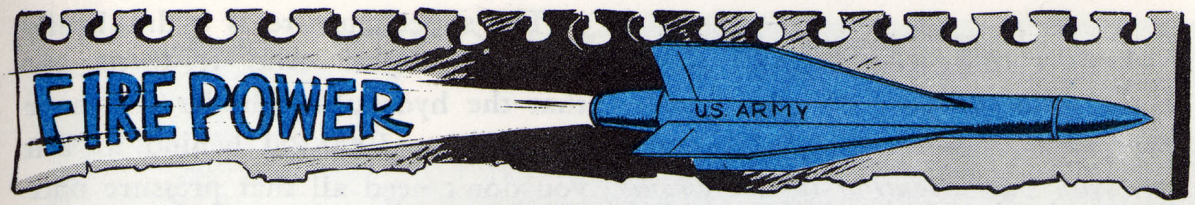
Dear Sergeant G. S. H.,

You don't have to use that AF form any more. The Army has one especially for the job in your aircraft's -20P manual.

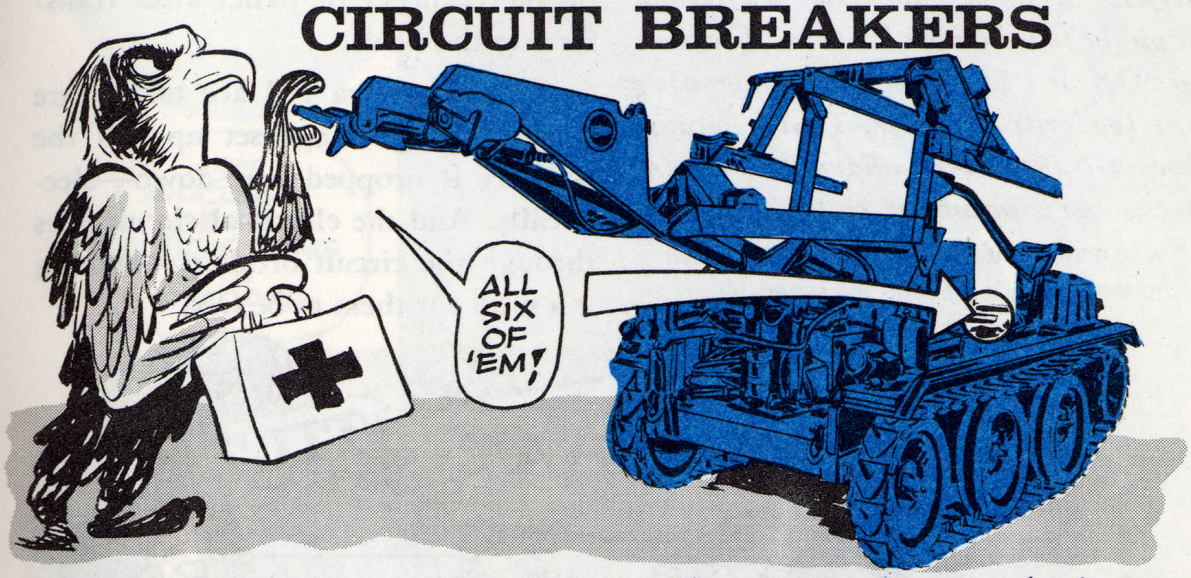
It's Form, Printed, Pilot Compass Card, FSN 6605-584-4227 (P/N AN 5823-1). You order it just like a repair part from your support unit.

Take a look in Chap. 2, page 2-53, in TM 55-1510-202-20P for an example of its nomenclature and stock number.

*Windy*




# USE THOSE CIRCUIT BREAKERS

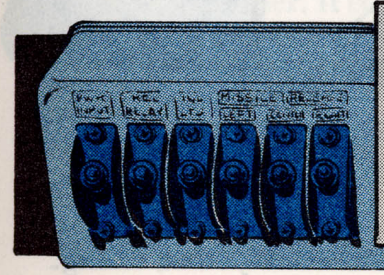



How about it? What would you give to cut down to just about zero the battering your Hawk loader-transporter's superstructure is taking? A weekend pass? Some folding money?

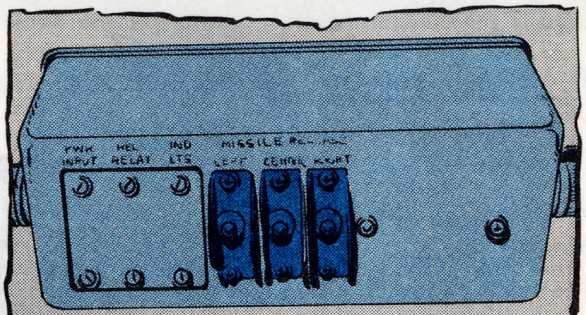
You don't have to give up either. It will cost you something, tho—the time it takes you to read the next few lines.

The thing that needs doing is the setting up of a hard-and-fast rule in your outfit: Only the guys who know what the score is should transfer missiles with the loader-transporter. And unless a man has had lots of training and experience, he's not about to know what's what.

The operator wants to be long on memory because he needs to remember that all six circuit breakers get put ON when the loader-transporter is being operated. Of course, the situation is changed when selected missiles are to be released. Then you use individual circuit breakers.



**WHEN OPERATING LOADER— ALL BREAKERS ARE ON**




If your 03000 serially numbered loader has been modified by MWO 9-1450-500-20/9 (31 Oct 62), you only have to contend with the **missile release** switches. The MWO, as you know, changes the circuit breakers from manual to automatic for the **power input, release relay** and **indicator lights.**



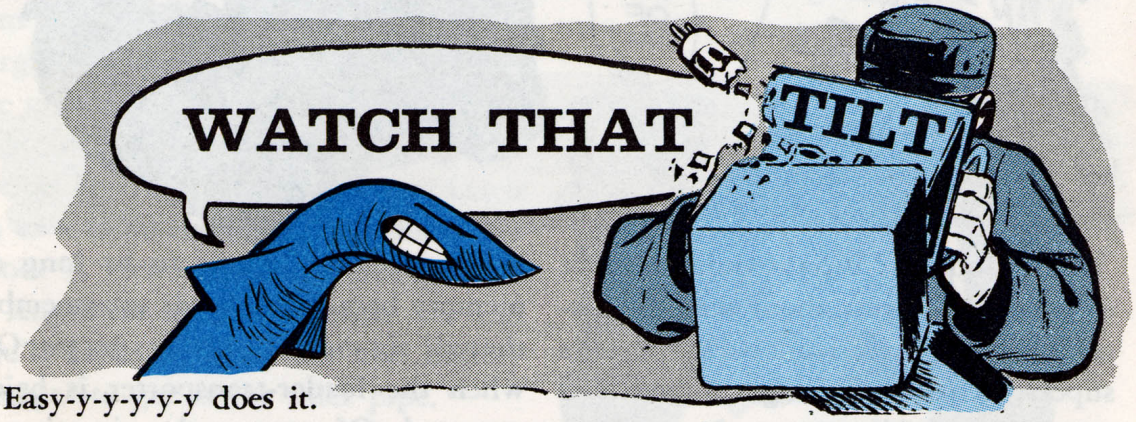
PS MORE

*Another thing that changes things is the serial number of your loader-transporter. If it's in the 03000 string, then you pay attention to the circuit breakers. If it's in the 07000 or above series, you don't have to give a second thought to whether the circuit breakers are ON or OFF when you're operating the loader-transporter. That's because loader-transporters above the 07000 series have automatic circuit breakers.*

So maybe you're wondering what the circuit breakers have to do with the superstructure.

The superstructure is hydraulically operated—right? And it turns out that the hydraulic cylinder can have as much as 3000-PSI behind it. But you don't need all that pressure once the weight of the missiles is supported by the launcher or pallet after transferring the birds.

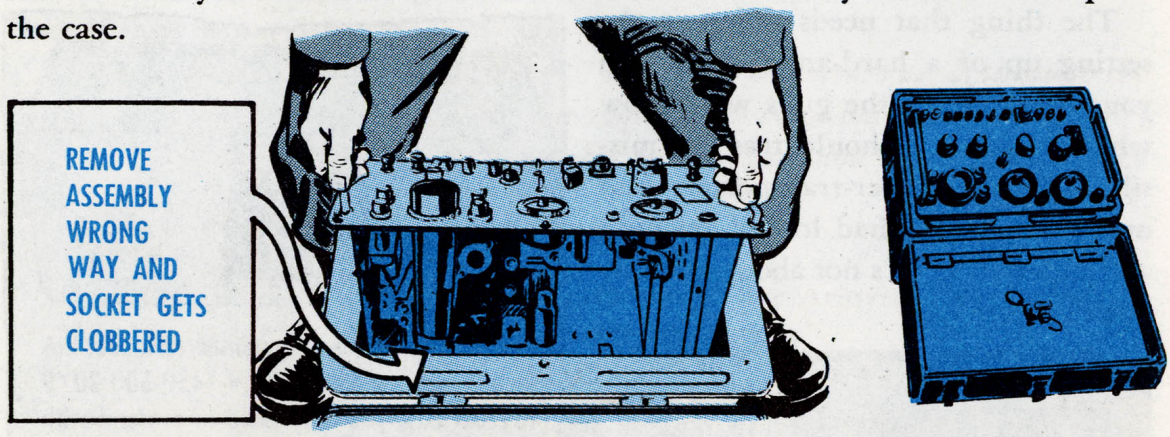
All those extra PSI are taken care of by having things set up so's the pressure is dropped way down—electrically. And the electrical circuit goes through the circuit breakers—making it a must for them to be ON.




Easy-y-y-y-y-y does it.

When you go to lift the Hawk receiver test set assembly out of its case, that is.

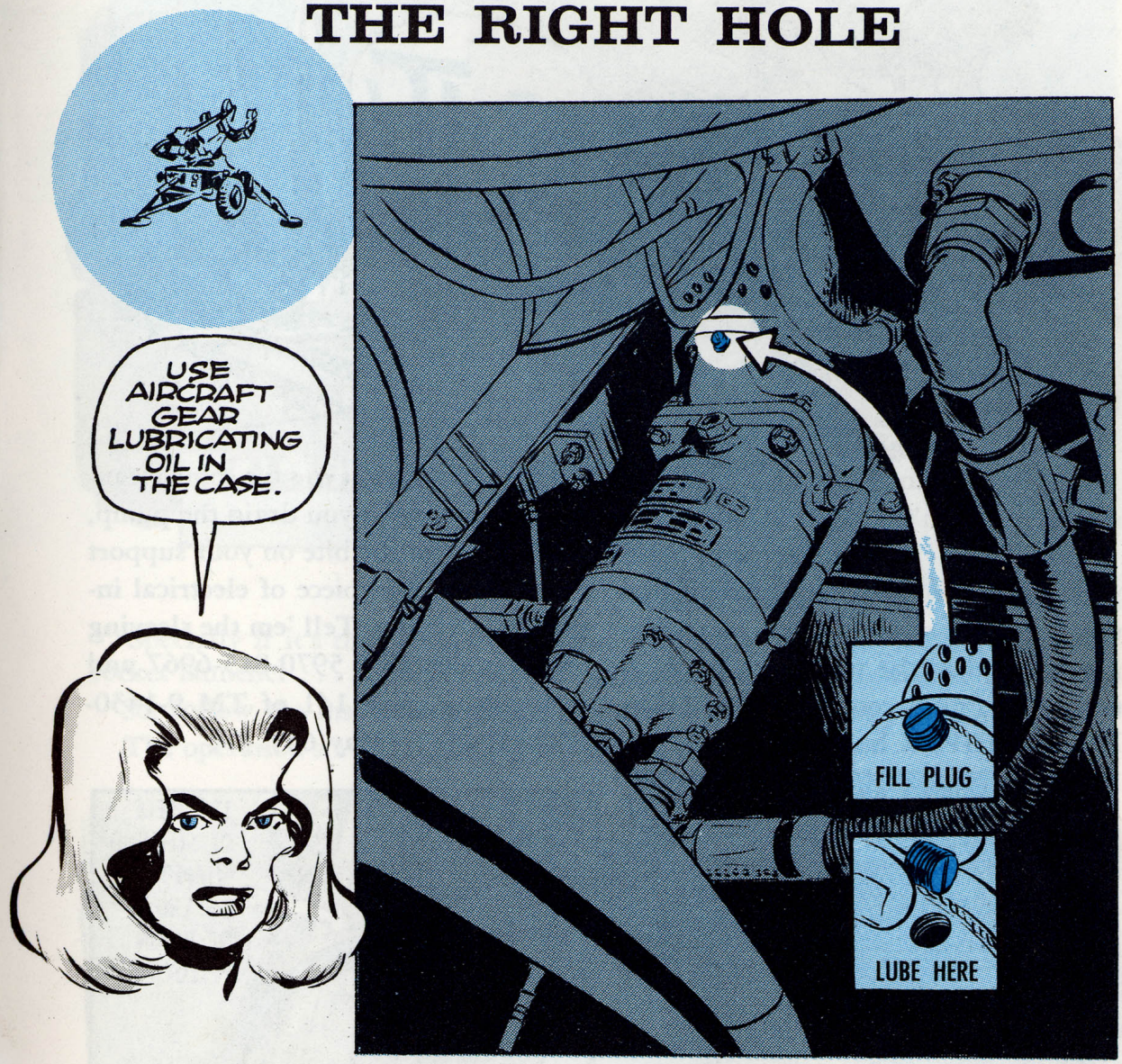
All you have to do is tilt the assembly the wrong way as it comes out of the case and you'll clobber the socket for the cathode ray tube on the lip of the case.




The idea is to lift the assembly straight out by taking hold of the handles in the middle. Or grab the handles at the end closest to you when you lift so that the weight of the assembly tilts the socket away from the lip of the case.

Either way . . . you still want to keep your mind on what you're doing.

# THE RIGHT HOLE



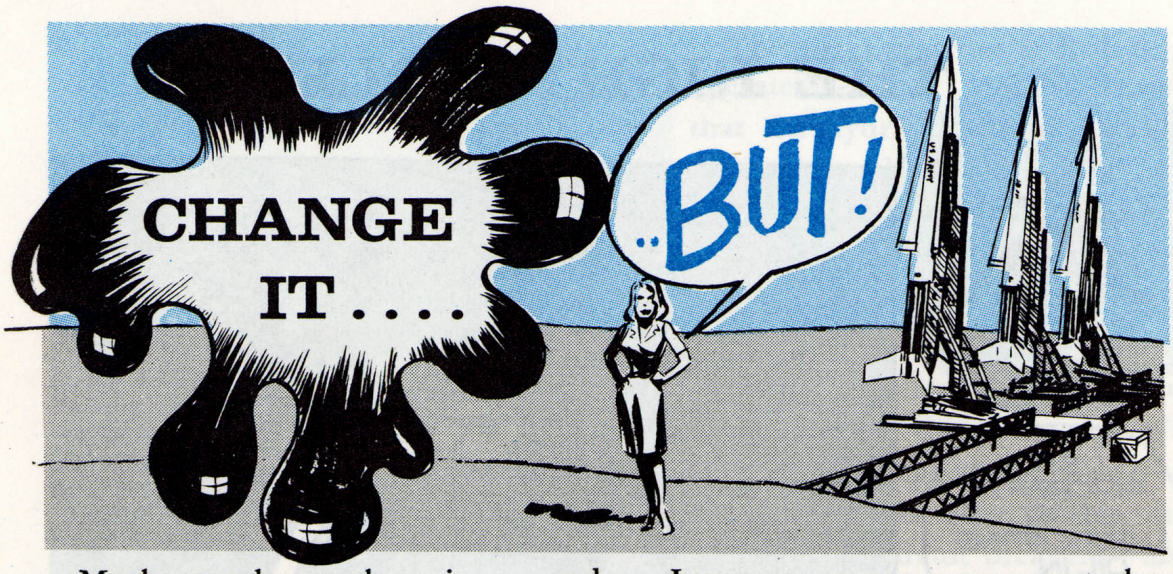

Maybe a picture is worth a coupla thousand words.

And it might be worth a few dollars when it comes to making sure you get the right lubricant in the gear case for the motor pump assembly on your Hawk launcher. It costs honest-to-goodness money to replace damaged parts.

So . . . to make sure you know what fill plug is being talked about in the "Oil is Needed" article on page 10 of PS 124, here's what it looks like.

As you read before, you put aircraft gear lubricating oil, MIL-L-6086, FSN 9150-223-4130, OGR in the gear case.

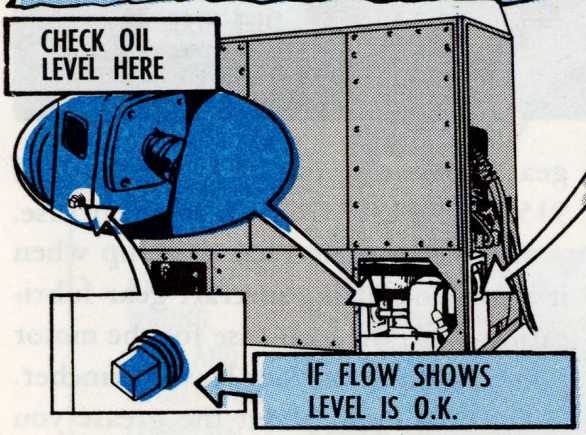
Another question has come up when it comes to putting aircraft gear lubricating oil in the gear case for the motor pump assembly on your Hawk launcher. What do you do about the grease you see in the gear case when you remove the fill plug for the first time? Don't worry about it . . . just pour in the oil. And remember—the latest thinking is you check the oil level every 100 hours or quarterly as the case may be.




Maybe you know about it . . . and maybe you don't.

Just so's you don't waste good black gold that's bought with greenbacks, tho, here's the straight scoop on changing oil used in the pump for the electron tube liquid cooler in your Nike-Hercules HIPAR building.

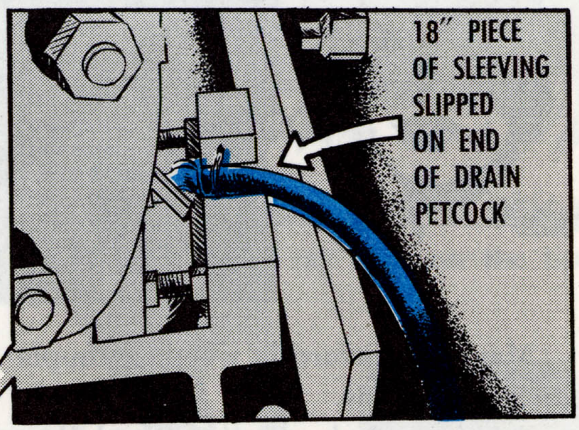
Don't—spelled D-O-N'-T—read anything into page 39 of Change 1 to LO 9-1430-250-20. That is, if you read between the lines that the oil gets changed every 10 days, forget it.




What you do every 10 days is check the oil level . . . and add any that might be needed.

You drain the pump and refill it with oil only when the oil gets dirty or monthly.

In case you want to save some cleaning up time when you drain the pump, you might put the bite on your support unit for an 18-in piece of electrical insulation sleeving. Tell 'em the sleeving comes under FSN 5970-815-6967 and is listed on page 141 of TM 9-1430-250-35P/4/1 (May 63).




All you do is slip the sleeving over the end of the drain petcock on the pump . . . hold the free end outside the cabinet . . . and let the oil drain into the container. Simple and clean.

If you're looking for another tip . . . when you refill the pump, let a little oil flow out of the check-level port. This shows when the oil's at the right level. Then wipe off the excess.

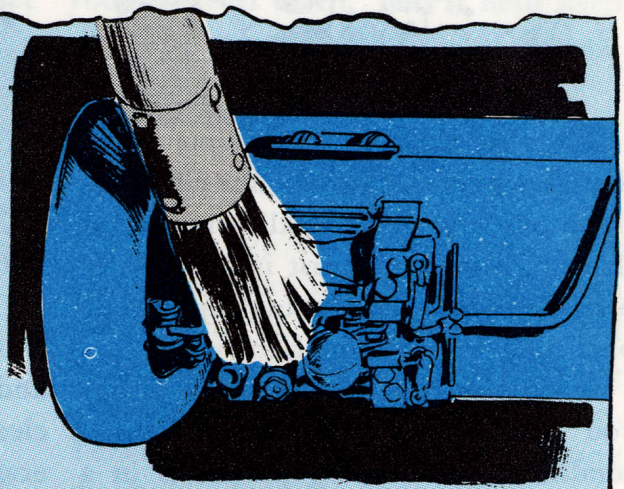
'Specially if it's the contact latch group assembly on your M20-series 3.5-in rocket launcher . . . because rust, corrosion and dirt can louse you up in a hurry.

So, follow the instructions in LO 9-2002 . . . for cleaning and lubing.

The operation's a cinch and it pays off big dividends.

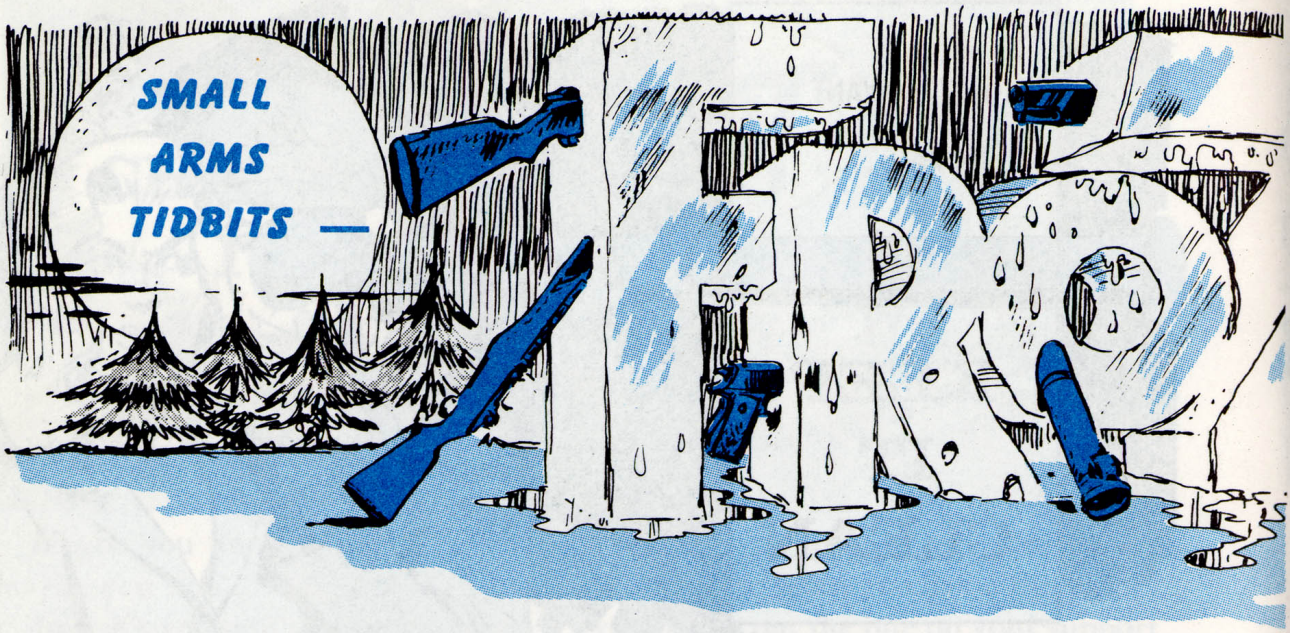
Just remove the cover and clean out the powder fouling and junk with rifle bore cleaner, a brush and a little elbow grease. If you don't have bore cleaner handy—dry cleaning solvent or volatile mineral spirits will do the trick just as well. And, if the corrosion is really deep-seated, use crocus cloth to dig it out.

After you've cleaned out all the gook, wipe the assembly dry—real dry, make sure all the bore cleaner's removed—and then hit the parts with a light coat of lube.

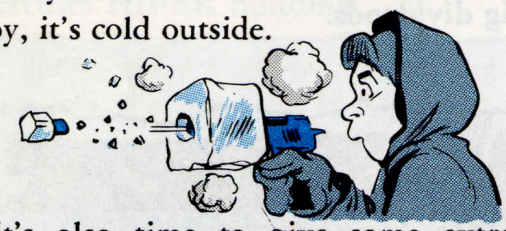


**USE PL SPECIAL ONLY**

But remember—go easy with the lube—just a light protective coating will get the job done. And only one or two drops on the contactor latch pins is plenty.




When that juice in the thermometer starts to skid to ridiculous numbers like 35 and 45 degrees below zero, and it's bitter enough to make even a brass monkey come down with the shakes—baby, it's cold outside.



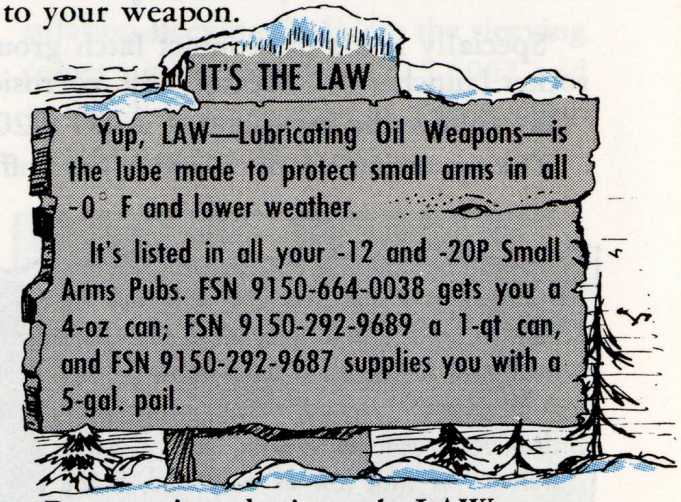
It's also time to give some extra thoughts to making sure your rifle, machine gun and other small arms are in shooting shape . . . just in case somebody decides to warm things up in your particular icebox—the hard way.

In extreme cold weather, little things you take for granted under normal conditions become big problems in a hurry. And, like they say, little things can make a big difference.

Take regular lube as an example.

It thickens in cold weather, practically turns into a solid at low temperatures and acts like bonding cement when it gets extremely cold.

So, when the thermometer dips below zero it's time to lay the LAW down to your weapon.

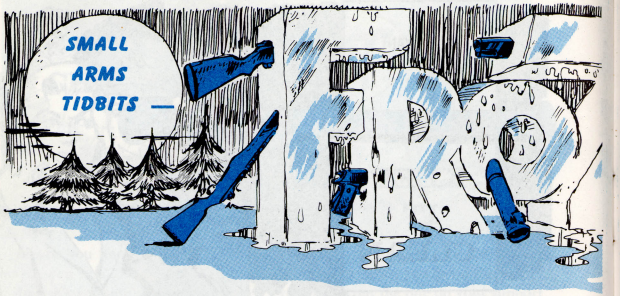



But you just don't apply LAW over the lube you have on your weapon. First you've got to completely strip it and clean all lubed parts with rifle bore cleaner, a dry-cleaning solvent or mineral spirits paint thinner, and then lube lightly with LAW.

And the word "lightly" means just that.

Your best bet is to wet a patch with LAW, wring it out, and then rub the parts with the damp patch.

Only a slight coating of lube is necessary. Too much just improves the

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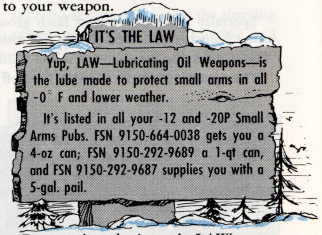


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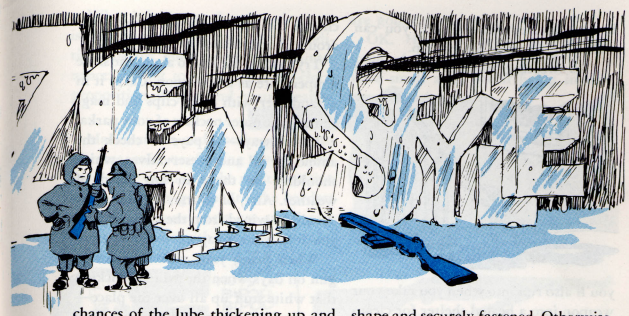


chances of the lube thickening up and making your weapon sluggish.

Natch . . . this means that all weapons must be cleaned and relubed as soon as possible after firing. Don't mix anything with the bore cleaner and get all the cleaner out of the barrel. It could freeze in there and cause real trouble.

Once you've got your weapon cleaned and lubed—keep it that way.

When it's not in use, and has to be stored outside, make sure it's properly covered and the cover itself is in good

shape and securely fastened. Otherwise, all your good work will go down the drain because ice, snow and moisture will get at the operating parts and louse them up.

It also makes good sense to exercise your weapon often. This'll help keep the lube from freezing as well as making it easier to operate in a hurry.

## NO SWEAT

Another tip that'll save you some grief is to make sure, when carrying a weapon, not to take it from the cold to the inside of a warm tent or building and then lug it back outside again. This is a made-to-order deal for getting moisture—condensation—on the working parts.

This condensation or "sweating" freezes the minute it hits the cold weather and you can have a busted part or malfunction on your hands, pronto.

The thing to do is to leave the weapon outside—properly stored—or put it



PS MORE

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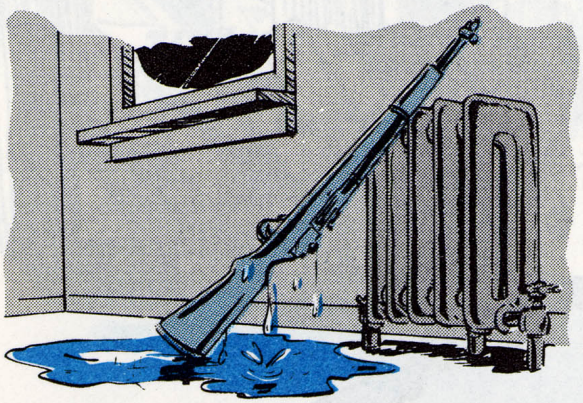
P.S. MORE

in an unheated shelter until you can pick it up on your return trip.

This sweating problem is something



you'll also run into when you take your weapon into a heated shelter for cleaning and lubing. In this case wait for about an hour or so for the sweating to stop and then go to work on the piece.

Before firing your weapon, give it a careful going over—real careful—before you squeeze the trigger. Make sure there's no snow or ice in the operating parts, sights, trigger and—above all—the barrel. Snow or ice packed in the barrel could cause it to burst on the first round fired.

Go through a complete dry run and work all moving parts. If any are frozen, try to warm them slightly and then move 'em, gradual-like, until they're loose.

When firing, don't let the hot parts of the weapon come in touch with snow, if you can help it. The melting snow will form ice while cooling, and trouble will be knocking at your door again.

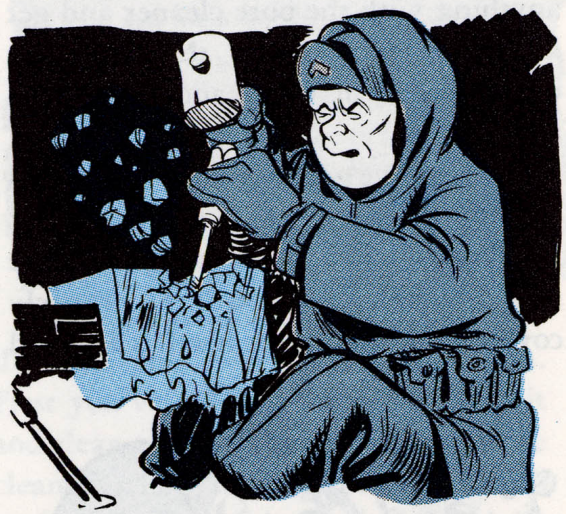
On the ammunition side of the fence—the situation is not too bad.

Extreme cold weather doesn't greatly change the accuracy or the general all-around performance of the ammo.

Try to keep the ammo about the same temperature as the weapon. Carry it in a bandoleer with extra clips and magazine in the outer pockets of your parka.

Like always—it pays to check the ammo for oil and preservatives, which shouldn't be there in any kind of weather. And, of course, ice and snow should be wiped from the ammo before you load your weapon.

When firing your rifle or machine gun on days when the wind is kicking that white stuff up all over the place—take time out often to check and clean out the receiver. This'll go a long way toward preventing stoppages caused by snow clogging or melting and freezing in the receiver.



Another thing to remember is that moisture freezes to cold objects . . . and that goes double for bare sweaty fingers. So, be extra careful when you're working with "cold-soaked" weapons and wear contact gloves if possible.

It's awful easy to leave a little skin on the metal or pick up a quick case of frost bite.

What it boils—or freezes—down to is that firing in blue cold arctic conditions means your preventive maintenance has got to be a round-the-clock proposition if you and your weapon are going to survive.

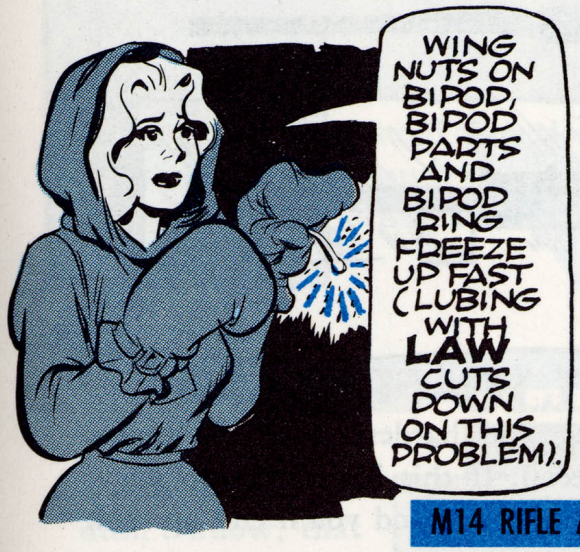
OK. Here's a quick rundown on some of the things to watch for on your small arms when firing in sub-zero temperatures.

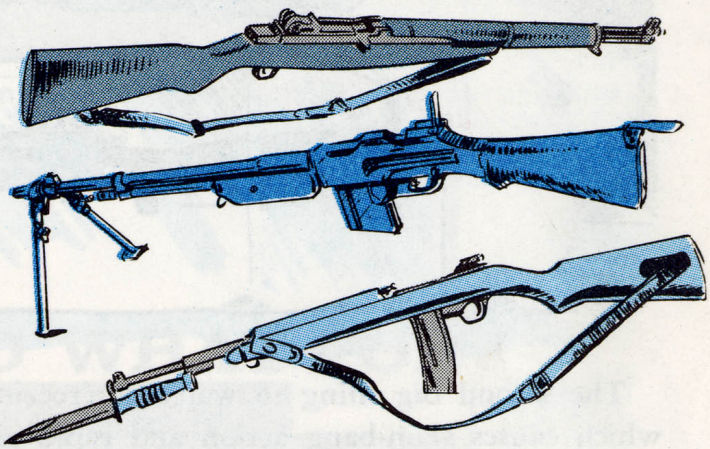
## M1 RIFLE, CARBINE AND BAR

Malfunctions and breakages due to extreme cold or fouling by ice and snow. The carbine is the most sensitive weapon in this group. It's the hardest to repair because parts are small and rough to handle with gloves or mittens.

The M1 gas cylinder lock screw freezes. The sear, firing pin and operating rods bust real easy.

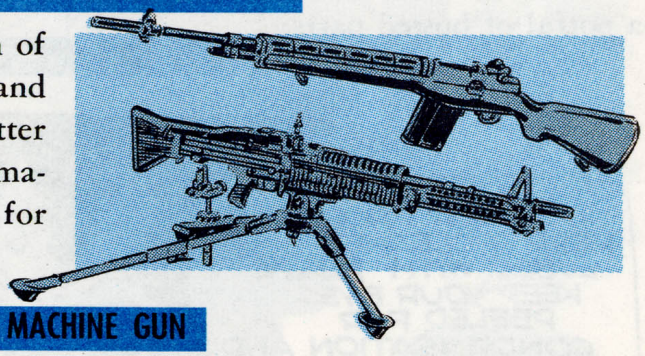
Defective or plugged magazines cause plenty of damage on the BAR. Keep magazines free from snow.



## M14 RIFLE AND M60 MACHINE GUN

The overall performance of both of these newer weapons is right good and they stand up to cold weather better than M1, Carbine, BAR and older machine guns. However, watch out for breakage of recoil parts.



## M85 MACHINE GUN

Here's a tip on things to come . . . that'll be well worth remembering. The new M85 machine gun—which is slated to replace the present .50-Cal. M2 turret-type MG's on some vehicles—gets a little special treatment.

To make sure things work smoothly, even when it's a frigid –65° below, a 4-oz plastic tube of Lubricating Oil, Semi-Fluid, is supplied as a basic issue with this weapon under FSN 9150-889-3522. Remember: The semi-fluid lube is strictly for the M85 machine gun and you use it only when it's real cold—like from –10° and below.

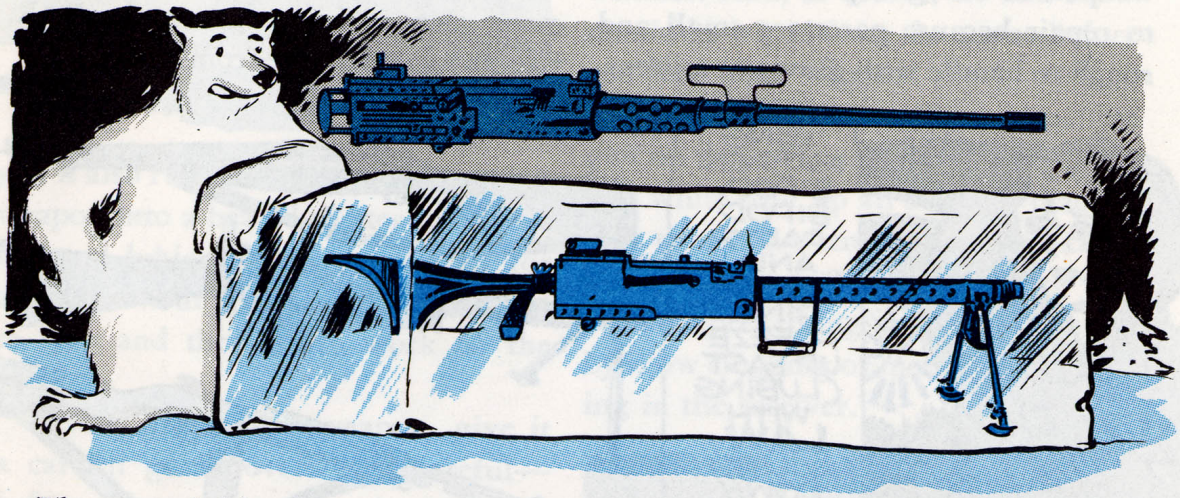


PS MORE

## .30 AND .50-CAL MACHINE GUNS

These two workhorses should be well lubed because of all the moving parts. However, in a pinch, if LAW's not available, apply a general purpose lube like PL Special before firing.

Both guns have a high breakage and malfunction rate in extreme cold weather, so keep repair parts handy. The most common problem is short recoil caused by the bolt not recoiling fully to the rear. If this happens, applying immediate action will get your gun going again—and as the gun warms up the problem should slack off.



The second big thing to watch is freezing and hardening of the buffer which causes slam-bang action and rapid recoil. If this happens, stop firing immediately. If you don't, something's gotta give . . . and you'll end up with a potful of busted parts.

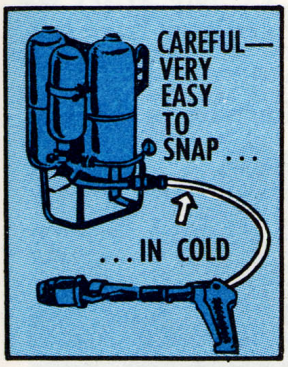
## M-79 GRENADE LAUNCHER

## ROCKET LAUNCHERS

The big worry here is the ammo and, because the propellant burns real slow in extreme cold, a rocket launcher makes for touchy shooting. For one thing the back-blast area (See TM 9-2002) is about tripled. Then the loader and gunner want to wear masks and gloves as protection against burning propellant.

With the 3.5-in launcher, make sure the rocket is dry and free from snow and ice and that the safety band on the fuze is left in place until just before firing. If you remove the band too soon before the rocket is loaded into the launcher, the bore-riding pin moves to the locked position and leaves a hole for moisture to seep into.

This means if there is a holdup in firing, the moisture can enter the fuze cavity, freeze and leave you with a dud at the target.



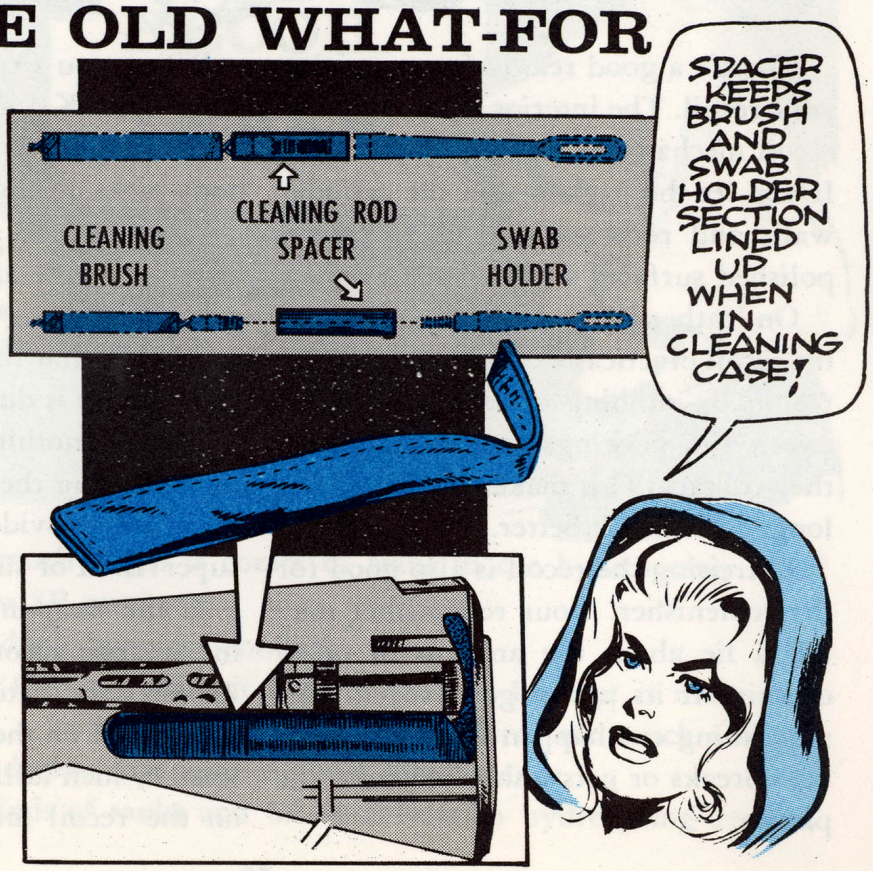

## PORTABLE FLAME THROWER

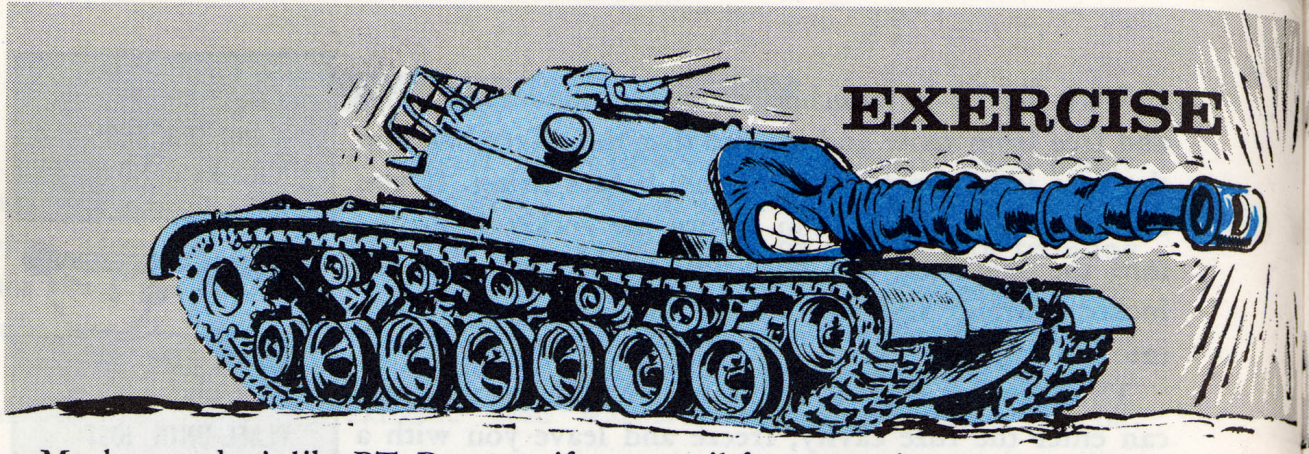
This baby has limited use in extreme-cold weather. Rubber parts—like the fuel hose—become rigid in sub-zero conditions. One wrong snap and you've got two short hoses instead of one long one. Two or three ignition charges should be used to make sure the fuel ignites. Thickened fuel is less dependable so, if possible, check sample batches first.

# THE OLD WHAT-FOR

Just in case you didn't know, that li'l piece of plastic that came with your small arms cleaning case (7267754 . . . FSN 1005-650-4510) is a cleaning rod spacer that's supposed to be used like so:

It keeps the cleaning brush and the cleaning rod swab holder section lined up right when you have 'em in the cleaning case.






Maybe you don't like PT. But even if you recoil from exercise, you've still got to exercise your recoil.

The recoil mechanisms and replenishers on tank cannon and artillery have got to be exercised like it says in TB ORD 303 (Apr 55) and Change 1 (Aug 58).

That means at least once every six months unless it says otherwise in the TB.

There's a good reason for exercising your recoil. The interior surfaces of the recoil mechanisms are highly polished. If you let the packings on the cylinder walls and rods get dry, these highly polished surfaces will corrode.

On 'tuther hand, regular exercise of the recoil practically eliminates this corrosion by rubbing on an oil film between the packings and the surfaces they contact. This makes the recoil last longer and work better.

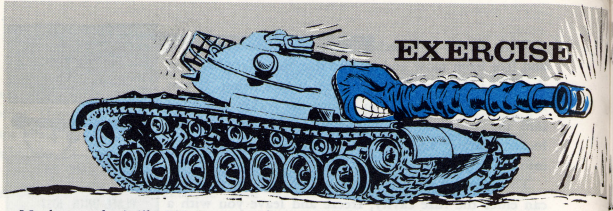
Exercising the recoil is also good for the replenisher. Your replenisher may tell a lie about the amount of oil it contains if its piston gets frozen. The same thing can happen if the indicator tape breaks or gets unhooked from the piston.

When you exercise your recoil you know it's OK and that might be pretty comforting information to have if somebody picks up that red telephone.

Support units are responsible for exercising recoil and replenisher equipment, but using units are responsible for seeing that they get the word when the exercise is due.

There's nothing wrong with using units putting the recoil through its calisthenics, provided its done under the supervision of support.

If the weapon's in storage, mark in the weapon record (in your DA Form 2408-4) the date it was last exercised and stencil on the gun tube in letters at least ¾ inch tall. Also, put a dated tag on the recoil mechanism. You'll find

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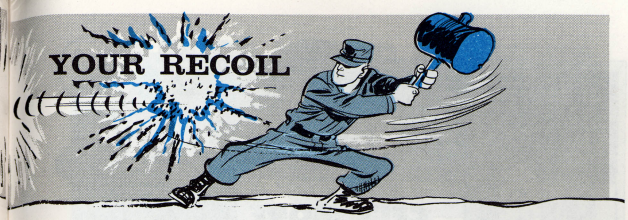



the dope on this in paras 28 and 29 of TM 9-300-3 (Aug 63) and para 10 of TB ORD 303 (Apr 55).

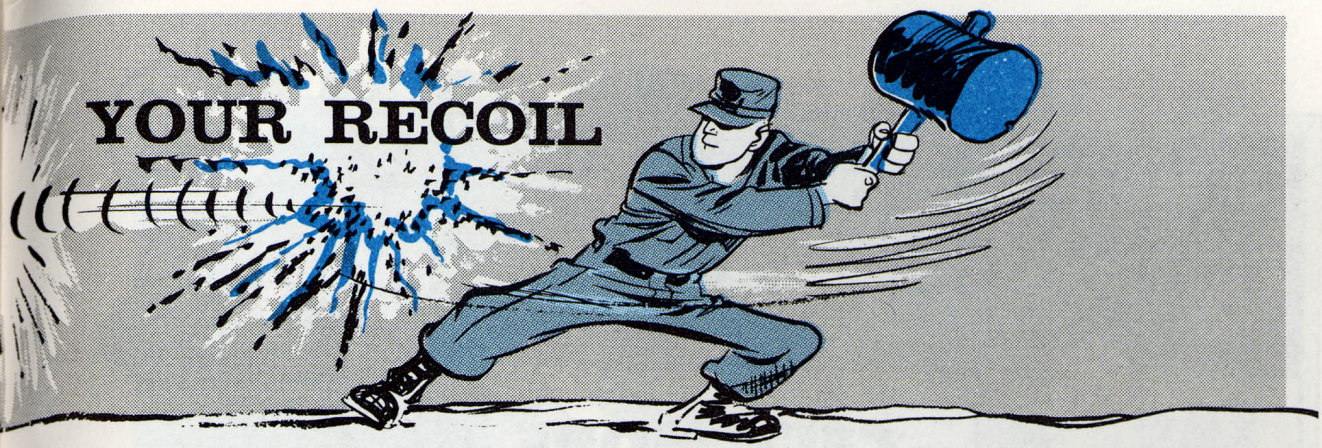
You gotta use some common sense on this exercise deal. If the weapon's been fired in the last six months, that counts as exercise for the recoil. In fact, that's the very best kind of recoil exercise.

How much is **too** much when it comes to leaks in the hydrospring recoil system of your tank or SP gun?

From now on you don't have to wonder!

TB 9-1000-224-20 (Oct 61) spells it out for you. If leakage is more than three ounces of oil in a 24 hour period, that is considered too much and you should holler loud and clear for your support maintenance.

That goes for all kinds of tanks and SP vehicles with hydrospring recoils, except for the M56.

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*Dear Half-Mast,*

*I've got a question on para 31c(2) of AR 735-35 "Supply Procedures for TOE Units and Non-TOE Activities."*

*I believe that paragraph means that a unit's stocks of CEI's (combat essential items) will not be* **below** *the allowances authorized by the appropriate TM's. However, that doesn't limit a unit to TM allowances. That is, stocks of CEI's can be above the TM authorization, if use and demand records justify the increase.*

*Others in this command say that a unit can't stock CEI's* **above or below** *TM allowances, regardless of use or demand.*

*Well, Sarge?*

**WO G. D. M.**

Dear Mister G. D. M.,

You're right.

A close reading of paragraphs 30 and 31c should clear the fog.

For example: Para 30b(2) says: "... the primary purpose of the record-of-demand card is to enable the organization to adjust quantities of repair parts authorized based upon actual demand experience . . ."

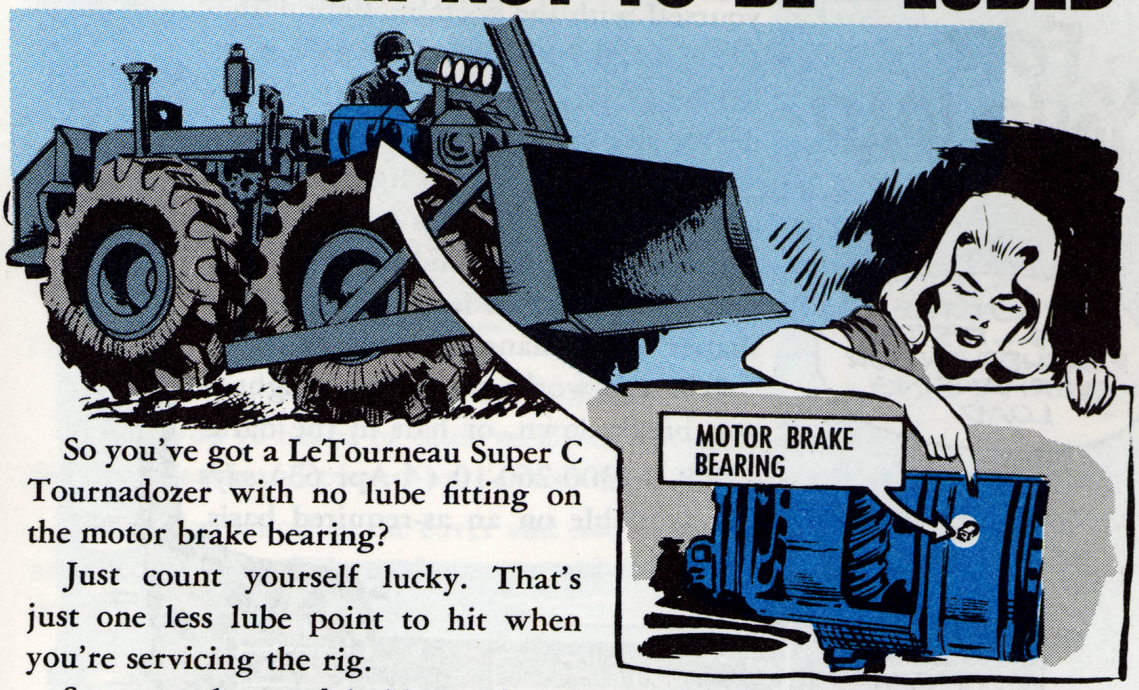
In para 31c, under "exceptions", units are required to **retain** (that is, not to reduce) CEI's per quantities set by TM's.

But the AR doesn't hog-tie you on increasing quantities of combat essential items (or any other items, for that matter) when you're properly backed-up by usage and demand records.

So . . . unless your local supply SOP says otherwise, you read the AR right.

Half-Mast

# TO BE OR NOT TO BE — LUBED




So you've got a LeTourneau Super C Tournadozer with no lube fitting on the motor brake bearing?

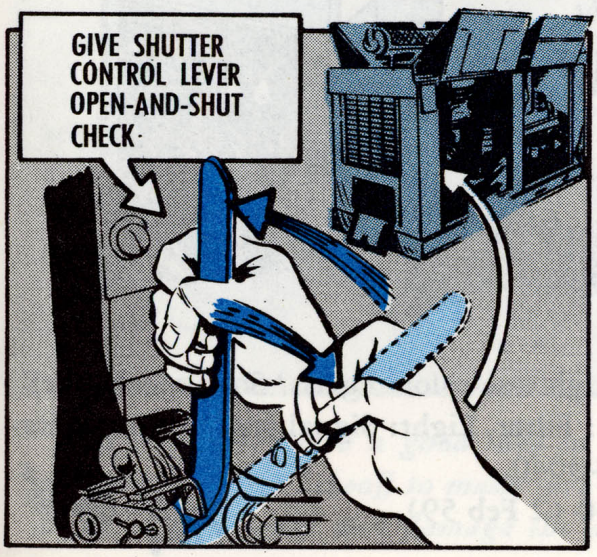
Just count yourself lucky. That's just one less lube point to hit when you're servicing the rig.

Some early model Tournadozers were equipped with life seal bearings (or oil impregnated bushings) so no lube is required. The original LO and TM 5-3300-1 (Nov 54) tell you about this. (See pages 52 and 55 of the TM.) But this point is not mentioned in LO 5-3300 (12 Aug 60).

If you've got the motor with a bearing that needs to be lubed, you'll find a fitting on it. On this you follow the word in the latest LO and lube lightly every 50 hours of operation.

Replacement electric motors, now in stock under FSN 6105-371-3674, have a lube fitting.

# OPEN-AND-SHUT CHECK




The engine shutter on most of your generator sets is controlled by a thermostat—when the shutter's free to move.

Trouble's brewing, tho, if the shutter binds, and the manual control handle can clue you when this happens.

Give the handle a smooth open-and-shut check now and then to make sure the thermostat can put the shutter into action when the engine temperature goes up or down.

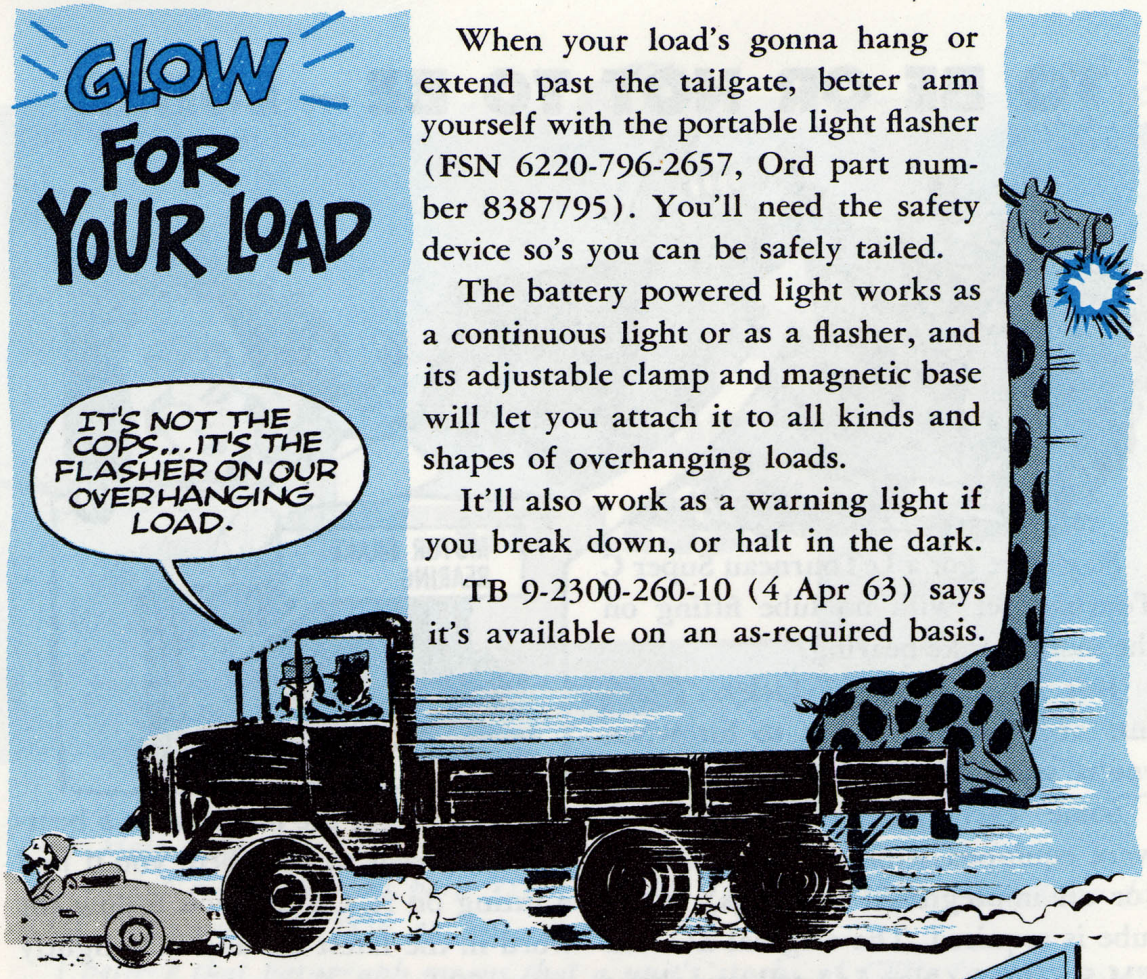
# GLOW FOR YOUR LOAD

When your load's gonna hang or extend past the tailgate, better arm yourself with the portable light flasher (FSN 6220-796-2657, Ord part number 8387795). You'll need the safety device so's you can be safely tailed.

The battery powered light works as a continuous light or as a flasher, and its adjustable clamp and magnetic base will let you attach it to all kinds and shapes of overhanging loads.

It'll also work as a warning light if you break down, or halt in the dark.

TB 9-2300-260-10 (4 Apr 63) says it's available on an as-required basis.

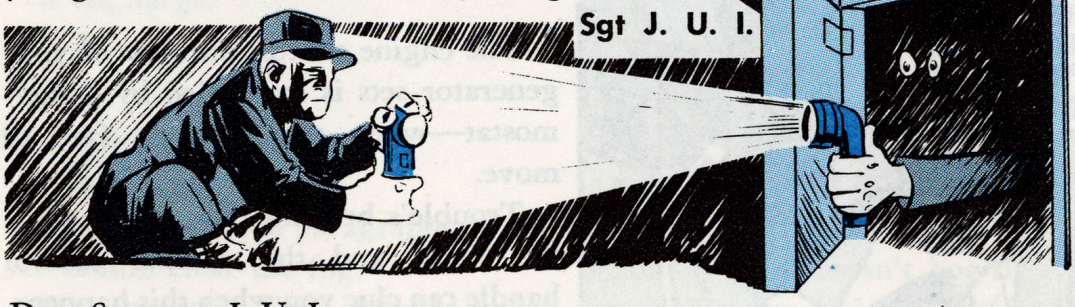



# LIGHT SUBJECT

*Dear Half-Mast,*

*I figure you're the man to put me in focus. What I need is the FSN, nomenclature and responsible technical service for those infrared filters. The ones that fit right into the MX-991 issue flashlight.*

Sgt J. U. I.

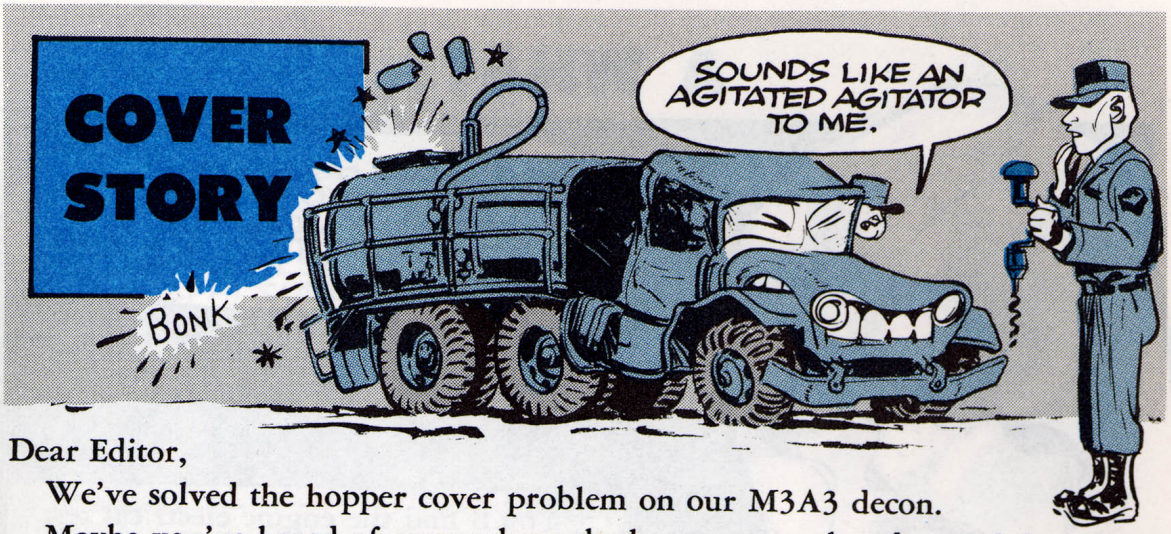



Dear Sergeant J. U. I.,

So you want to look at things through rose-colored glass? So to speak. Well, fit this into your flashlight and shine it: Filter, Light: Signal type M439; infrared, approx. 1.7″ dia; FSN 5850-408-3040.

You'll find 'er listed in SM 11-1-5850 (2 Feb 59).

*Half-Mast*



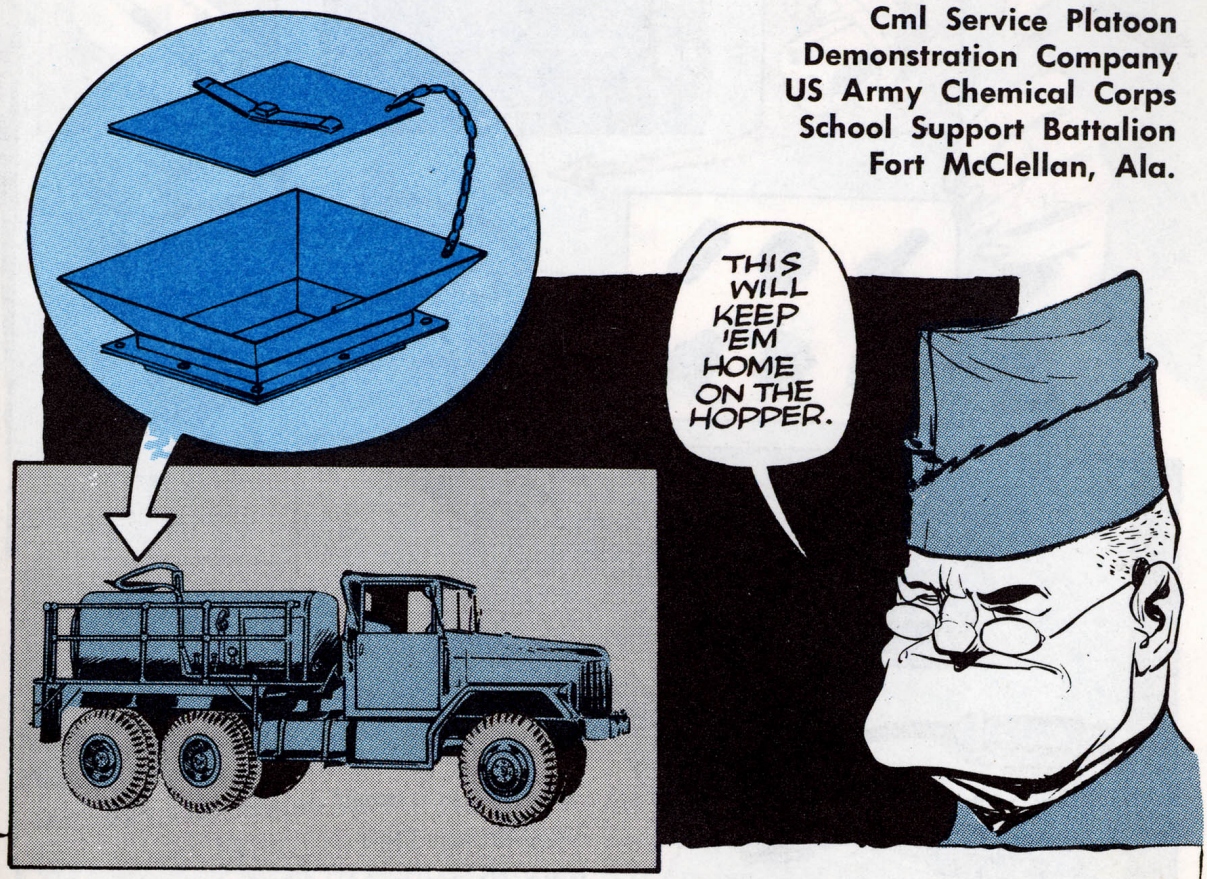

Dear Editor,

We've solved the hopper cover problem on our M3A3 decon.

Maybe you've heard of cases where the hopper cover has dropped down into the decon tank and played havoc with the agitator paddles.

We drilled a hole in the cover and one in the corner of the hopper. We then attached a 12-in chain to the cover and the hopper. Now if the cover drops it doesn't damage the paddles.

**Cml Service Platoon**
**Demonstration Company**
**US Army Chemical Corps**
**School Support Battalion**
**Fort McClellan, Ala.**

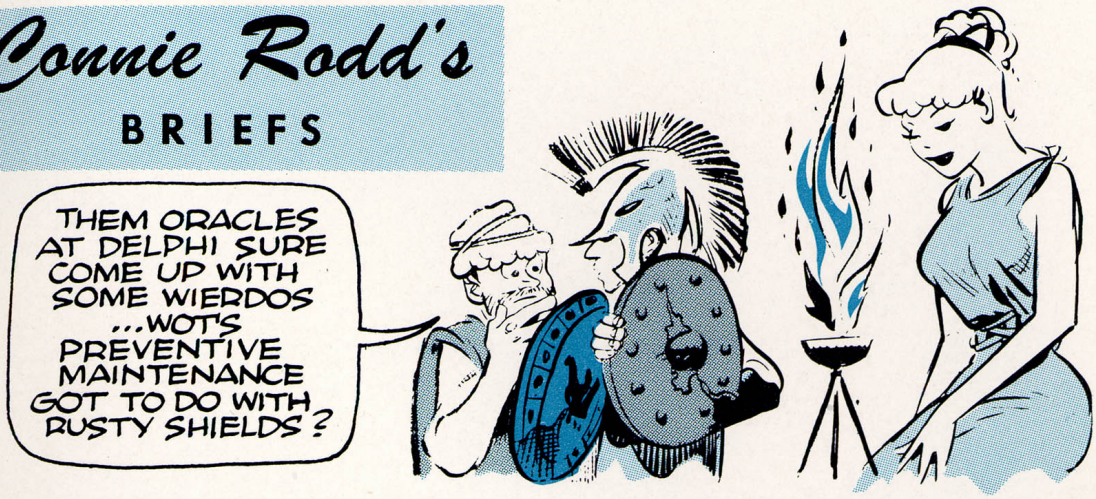



*(Ed Note—It's also a good idea to check the inside of the tank before you engage the power takeoff to make sure there are no tools, pipe, or other objects inside which would also damage the agitator paddles.)*

# A WHAT?

THE A'S HAVE IT IF YOU'RE TRYING TO FIND THE BREAKDOWN OF ADAPTER SETS. (THERE ARE PICTURES, TOO!)
You'll find the engine electrical test adapter set, FSN 4910-378-2020, in SM 9-4-4910-A62 (26 May 61).
Or, if you need engine electrical test adapter set, FSN 4910-348-7600, you'll want to get hold of SM 9-4-4910-A63 (26 May 61).

# Connie Rodd's BRIEFS




## LIKE FALLING OFF A LOG

That's how easy it is to get as many copies of PS that your outfit needs . . . and get 'em fast via "pin-point" distribution. All it takes is DA Form 12-4 showing your outfit's needs routed thru channels to:

**Adjutant General Publications Center**
**2800 Eastern Blvd.**
**Middle River**
**Baltimore, Md. 21220**

## NO SUCH ANIMAL

Don't let Change 3 (19 Jul 63) to TM 9-1440-250-12/1 get you Nike-Hercules people in a stew. The table following para 3 on page ii lists MWO 9-**1440**-250-30/22 two times. Instead of going bats trying to find the MWO's, make a note of this: The modifications should read MWO 9-**1400**-250-30/22. The MWO's listed in the change just don't exist.

## THINK TWICE

Before using the Lubrication Chart (or Order) that's printed in your equipment's TM . . . think twice. Remember, that chart (or order) is as old as the TM and in many cases doesn't reflect the latest lubrication instructions. Always go by the LO that's published as a separate publication; and go by the one that's dated the latest. You'll find the up-to-date LO listed in the latest DA Pamphlet 310-4.

## HOLD THE BRUSH!

In cleaning your M17 field protective mask be sure to keep any kind of brush (or sharp object) away from the voice-mitter. The brush bristles can land in the holes in the protective cover and puncture the diaphragm. If the diaphragm is punctured your mask's no longer **safe.** It'll leak. Replacing the voicemitter is a job for support.

## ICED-UP BIRD

Want to get rid of ice on your bird? OK, then latch on to the deicing-defrosting fluid called for in TB AVN 23-13 (14 Dec 61), "Anti-Icing, Deicing, and Defrosting of Parked Aircraft." You'll find the fluid, MIL-D-19418, listed in the Bird Dog (0-1) TM 55-1510-202-20P (3 May 63), under FSN 6850-577-4752. Other new -20P manuals expect to pick it up as they come along.

*Would You Stake Your Life right now on the Condition of Your Equipment?*

HEY! WOT'S HOLDIN' UP THE ADVANCE?? LET'S GET THESE TROOPS OUTTA THE SNOW!
YEAH! WE'RE FREEZING UP HERE.
AHHH... THERE'S ICE ON THE BRIDGE... SOME GOOF-BALL PERSONNEL CARRIER SKIDDED... I HEAR SOME HIGH RANK V.I.P. WAS IN IT, TOO...
COLD WEATHER
MAKES CONSTANT DEMANDS
FOR SPECIAL CARE
IN HANDLING
ALL EQUIPMENT